(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 073 313 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
12.07.2023 Bulletin 2023/28

(21) Application number: **20820233.3**

(22) Date of filing: **12.12.2020**

(51) International Patent Classification (IPC):
D06F 75/10 *(2006.01)* *D06F 75/12* *(2006.01)*

(52) Cooperative Patent Classification (CPC):
D06F 75/10; F22B 1/28; D06F 75/12

(86) International application number:
PCT/EP2020/085867

(87) International publication number:
WO 2021/116472 (17.06.2021 Gazette 2021/24)

(54) **SAFETY SYSTEM FOR A GARMENT CARE DEVICE COMPRISING A STEAM GENERATOR AND AN OPENING ARRANGED IN SAID STEAM GENERATOR**

SICHERHEITSSYSTEM FÜR EINE KLEIDUNGSPFLEGEVORRICHTUNG MIT EINEM DAMPFERZEUGER UND EINER IM DAMPFERZEUGER ANGEORDNETEN ÖFFNUNG

SYSTÈME DE SÉCURITÉ POUR DISPOSITIF DE SOINS DE VÊTEMENT COMPRENANT UN GÉNÉRATEUR DE VAPEUR ET UNE OUVERTURE DISPOSÉS DANS LEDIT GÉNÉRATEUR DE VAPEUR

(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 MK MT NL NO PL PT RO RS SE SI SK SM TR

(30) Priority: **12.12.2019 EP 19215484**

(43) Date of publication of application:
19.10.2022 Bulletin 2022/42

(73) Proprietor: **Koninklijke Philips N.V.**
5656 AG Eindhoven (NL)

(72) Inventors:
- **CHEN, Sen Kee**
  5656 AE Eindhoven (NL)
- **LIM, Yu Xuan**
  5656 AE Eindhoven (NL)
- **TAN, Kit Hai**
  5656 AE Eindhoven (NL)
- **YUAN, Ding**
  5656 AE Eindhoven (NL)

(74) Representative: **Vollering, Stefanus Franciscus Maria**
Philips Domestic Appliances IP Department
High Tech Campus 42
5656 AE Eindhoven (NL)

(56) References cited:
EP-A1- 2 845 944
FR-A1- 2 706 587
GB-A- 2 365 028

EP 4 073 313 B1

Description

FIELD OF THE INVENTION

[0001] The invention relates to safety system for a garment care device comprising a steam generator and an opening arranged in the steam generator.

[0002] The invention may be used in the field of garment care.

BACKGROUND OF THE INVENTION

[0003] Garment care device comprising a steam generator and an opening arranged in said steam generator are known.

[0004] An example of such known device is illustrated in Fig. 1A and Fig.1B. Fig. 1A depicts an external view of this known garment care device 100, while Fig. 1B depicts a partial cross-sectional view.

[0005] The garment care device comprises a housing 101. A steam generator 102 is arranged in the housing 101. An opening 103 is arranged in the steam generator 102 for accessing an inside part of the steam generator 102. A detachable plug 104 is used for closing the opening 103. A hose cord 100b is connected between the steam generator 102 and an iron 100a.

[0006] In this type of garment care device, the opening is intended to operate a de-calc or rinse of the steam generator. Indeed, when water is heated and then evaporates in the steam generator, scale may overtime accumulate in the steam generator.

[0007] When the plug is removed from the opening, scale is being discharged together with the remaining water full of minerals, for example in a sink or a cup. Note that the plug is sometimes provided at its extremity with a spoon or scraper element 107 used to free the path of the opening 103 if there is a lot of calc accumulated, in particular when the user does not rinse regularly the steam generator 102.

[0008] Although this known type of device greatly helps user to de-calc the steam generator and helps to extend the lifetime of the device, user is usually advised to conduct this operation with due care. Typically, user is asked to switch off and unplug the device, to allow it to cool down for an hour after the previous use. Such guidance is for example explained in the user manual of the garment care device.

[0009] However, in case user would not follow those recommendations, in particular would not wait a sufficient amount of time after the previous use of the device, this process may involve some limitations. Indeed, if the steam generator is still very hot and contains steam under pressure when the user starts to remove the plug, some steam SS might be projected in direction of the user's hand, with a risk of scalding.

[0010] GB 2 365 028 A discloses a steam generator iron with audible warning means.

[0011] EP 2 845 944 A1 discloses a household appliance for ironing with a filter for retaining mineral particles carried by steam.

OBJECT AND SUMMARY OF THE INVENTION

[0012] It is an object of the invention to propose an improved garment care device that avoids or mitigates above-mentioned problems.

[0013] The invention is defined by the independent claims. The dependent claims define advantageous embodiments.

[0014] To this end, the garment care device according to the invention comprises:

- a housing,
- a steam generator arranged in the housing,
- an opening arranged in the steam generator for accessing an inside part of the steam generator, the opening being provided in a tubular portion extending from a wall of the steam generator towards the housing,
- a detachable plug for closing the opening,
- an enclosure comprising a first extremity sealed to the tubular portion, and a contact surface adapted to make contact with a portion of the detachable plug when the detachable plug is closing the opening, thereby to hermetically seal the enclosure from the steam generator, the enclosure being provided within the housing,
- a tube assembly comprising a first end being fluidly connected to an inside area of the enclosure, and a second end opening outside the housing, wherein the first end of the tube assembly is connected to the enclosure inside the housing.

[0015] By arranging an enclosure between the opening and the detachable plug, steam that would leak at the interface of the opening and the plug when removing the plug, is kept contained inside the enclosure. Moreover, thanks to the tube assembly, the steam in the enclosure is diverted and discharged far away from the user's hand. This also prevents a leak of steam in direction of the user if the plug would not have been correctly plugged into the opening.

[0016] So this solution constitutes a safety system for a garment care device comprising a steam generator and an opening arranged in the steam generator.

[0017] Detailed explanations and other aspects of the invention will be given below.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] Particular aspects of the invention will now be explained with reference to the embodiments described hereinafter and considered in connection with the accompanying drawings, in which identical parts or sub-steps are designated in the same manner :

Fig. 1A depicts an external view of a known garment care device,
Fig.1B depicts a partial cross-sectional view of the garment care device of Fig.1A,
Fig.2A depicts schematically a partial cross-sectional view of a garment care device according to the invention when a plug is detached from the garment care device,
Fig.2B depicts the view of Fig.2A when the plug is attached to the garment care device,
Fig.3A depicts a partial cross-sectional view of a garment care device according to the invention using a deformable/collapsible enclosure, when a plug is detached from the garment care device,
Fig.3B depicts the view of Fig.3A, when the plug is attached to the garment care device,
Fig.3C depicts a partial three-dimensional view of a garment care device according to the invention using a deformable/collapsible structure for the enclosure, when a plug is detached from the garment care device,
Fig.3D depicts a partial three-dimensional view of a garment care device according to the invention using a deformable/collapsible structure for the enclosure, when a plug is attached to the garment care device,
Fig.4A, Fig.4B, Fig.4C, Fig.4D depict various solutions for sealing an enclosure in a garment care device according to the invention,
Fig.5 depicts schematically a partial cross-sectional view of a garment care device according to the invention using a deformable bellows,
Fig.6A to 6F depicts various bellows being deformable longitudinally,
Fig.7A and Fig.7B depict two views of an enclosure according to the invention made of silicone rubber or EPDM material,
Fig.8A depicts schematically a first embodiment according to the invention using an enclosure being non-deformable along its longitudinal axis,
Fig.8B depicts schematically a second embodiment according to the invention using an enclosure being non-deformable along its longitudinal axis,
Fig.9A depicts a partial cross-sectional view of a garment care device according to the invention using a non-deformable enclosure, when a plug is detached from the garment care device,
Fig.9B depicts the view of Fig.9A, when the plug is attached to the garment care device,
Fig.9C depicts a three-dimensional exploded view of Fig.9A.

DETAILED DESCRIPTION OF THE INVENTION

[0019] Fig.2A depicts schematically a partial cross-sectional view of a garment care device 200 according to the invention when a plug 204 is detached from the garment care device. Fig.2B depicts the view of Fig.2A when the plug 204 is attached to the garment care device.

[0020] The garment care device 200 comprises a housing 201.

[0021] The garment care device 200 also comprises a steam generator 202 arranged in the housing 201.

[0022] An opening 203 is arranged in the steam generator 202 for accessing an inside part of the steam generator 202.

[0023] The garment care device 200 also comprises a detachable plug 204 for closing the opening 203.

[0024] The garment care device 200 also comprises an enclosure 205 having a first extremity E1 sealed to the opening 203, and a contact surface S1 adapted to contact with a portion P of the detachable plug 204 when the detachable plug 204 is closing the opening 203, for hermetically sealing the enclosure 205.

[0025] The garment care device 200 also comprises a tube assembly 206 comprising a first end EE1 being fluidly connected to an inside area of the enclosure 205, and a second end EE2 opening outside the housing 201.

[0026] For example, the steam generator 202 is a pressurized steam generator receiving water from a water source, such as a water tank (not shown).

[0027] As illustrated, the opening 203 is provided in a tubular portion extending from the wall of the steam generator 202, for example being soldered at the periphery of a hole arranged in the steam generator 202. The tubular portion extends from the steam generator 202 towards the housing 201.

[0028] Thus, the enclosure 205 is provided within the housing 201.

[0029] This may assist to improve user safety because the housing 201 provides an additional barrier between the user and any steam within the enclosure 205 while the detachable plug 204 is being removed.

[0030] The first end EE1 of the tube assembly 206 is connected to the enclosure 205 inside the housing 201. This may further assist to protect the user from any steam released into the enclosure 205. Preferably, the opening 203 is arranged at a lower part of said wall, such as in the lower second-half height of the steam generator 202, and preferably flush with the bottom level of the steam generator.

[0031] Similarly as in the device of the prior art depicted in Fig.1A and Fig.1B, the opening is used to conduct a decal cleaning of the steam generator 202.

[0032] The enclosure 205 forms a hollow volume around the opening and the plug 204, such as a ring-shaped.

[0033] The first extremity E1 sealed to the opening 203 forms an air-tight connection. Preferably, the first extremity E1 is permanently fixed to the opening 203.

[0034] Moreover, when the plug 204 is closing the opening 203, the contact surface S 1 gets into air-tight contact with the portion P of the detachable plug 204. As a result, the enclosure 205 defines an air-tight volume all around the opening and the plug, which prevents any leak of steam towards a user's hand detaching the plug 204 from the opening 203.

[0035] As depicted in Fig.2B, if case the use starts to detach the plug 204 from the opening 203 whereas some (pressurized) steam are still contained the steam generator 202, the steam will come out from the opening 203 in view that the attaching of the plug 204 is now loosened. A fluid path is thus created at the interface between the opening and the plug, though which steam circulates. The steam is illustrated by small clouds. Given that the contact surface S1 are and the portion P of the detachable plug 204 are adapted to keep in air-tight contact with a while, the steam coming out from the opening 203 is kept inside the enclosure 205.

[0036] As soon as the steam reaches the inside area of the enclosure 205, the steam has to be discharged before the pressure builds up in the enclosure 205 to avoid any risk braking up the enclosure. As such, the tube assembly 206 which is fluidly connected to the inside area of the enclosure should have an internal cross-section of at least 5 square millimetres, preferably 15 mm^2, to allow steam (and condensed hot water) to escape quickly the housing.

[0037] Preferably, as illustrated in Fig.2B, the second end EE2 of the tube assembly 206 is connected to a bottom part of the housing 201, so that steam exits from underneath the base, away from the user's hand being manipulating the plug 204.

[0038] Fig.4A, Fig.4B, Fig.4C and Fig.4D depict various solutions for sealing an enclosure in a garment care device according to the invention,

Preferably, the first extremity E1 is attached around the opening 203 by any one of the following sealing:

- a seal SL1 mounted radially between an outer surface of said opening 203 and the first extremity E1, as illustrated in Fig.4A,
- a seal SL2 mounted by hugging between the opening 203 and the first extremity E1, as illustrated in Fig.4B,
- an O-ring seal SL3 mounted between the opening 203 and the first extremity E1, as illustrated in Fig.4C,
- a grip-in groove G1 arranged in the opening 203, as illustrated in Fig.4D.

[0039] Preferably, as illustrated in Fig.2A, the enclosure 205 is resiliently deformable along its longitudinal axis A1. The contact surface S1 is a second extremity E2 opposite the first extremity E1. The portion P is a front surface of the detachable plug 204 facing the opening 203 when the detachable plug 204 is closing the opening 203.

[0040] Having the enclosure 205 being resiliently deformable along its longitudinal axis A1 allows:

- compressing the enclosure 205 along its longitudinal axis A1 when the plug 204 is closing the opening 203,
- decompressing the enclosure 205 along its longitudinal axis A1 when the plug 204 is being detached by user from the opening 203. When decompressing, the enclosure 205 continues to keep contact with the portion P, ensuring an air-tight enclosure of the steam in the enclosure 205.

[0041] Preferably, the enclosure 205 is resiliently deformable along its longitudinal axis A1 by at least 5% of its longitudinal length, preferably 25%. If the plug is attached to the opening via a screw/thread coupling, this length of deformability preferably corresponds to the longitudinal displacement of the plug after having been rotated by a few turns. User will then get audible feedback from the noise of the steam circulating in the enclosure and the tube assembly, and will understand that further rotating the plug to detach it from the opening should not be continued.

[0042] A first example for having the enclosure 205 being resiliently deformable along its longitudinal axis A1 is to choose a deformable bellows for the enclosure 205.

[0043] Fig.6A to 6F depicts various bellows being deformable longitudinally, preferably made of heat-resistant material, such as plastic:

- Fig.6A depicts a bellows having a round cross-section,
- Fig.6B depicts a bellows having an oblong/oval cross-section,
- Fig.6C depicts a bellows having a rectangular cross-section,
- Fig.6D depicts a bellows having a tapered cross-section,
- Fig.6E depicts a bellows having a wire-frame cross-section,
- Fig.6F depicts a bellows having a customized rounded cross-section.

[0044] Fig.5 depicts schematically a partial cross-sectional view of a garment care device according to the invention using a deformable bellows for the enclosure 205.

[0045] Preferably, the enclosure 205 and the tube assembly 206 are moulded together.

[0046] A second example for having the enclosure 205 being resiliently deformable along its longitudinal axis A1 is to choose a deformable/collapsible structure for the enclosure 205, preferably being heat-resistant.

[0047] Fig.7A and Fig.7B depict two views of an enclosure 205 according to the invention forming a deformable/collapsible structure.

[0048] Preferably, the enclosure 205 is made of silicone rubber or EPDM (Ethylene Propylene Diene Monomer) rubber material.

[0049] Preferably, the enclosure 205 and the tube assembly 206 are moulded together.

[0050] Fig.2A and Fig.2B schematically represent this type of deformable/collapsible enclosure 205.

[0051] Fig.3A depicts a partial cross-sectional view of a garment care device 200 according to the invention using a deformable/collapsible enclosure 205, when the plug 204 is detached from the opening 203 of the garment

care device. The enclosure 205 corresponds to the enclosure as depicted in Fig.7A and Fig.7B.

[0052] Fig.3B depicts the view of Fig.3A, when the plug is attached to the garment care device.

[0053] For sake of clarity, the tube element 206 is not represented.

[0054] A scraper element 207 may be attached to the extremity of the plug 204, similarly as the device depicted along with Fig.1B.

[0055] Preferably, the plug 204 comprises a first part made of metal material comprising a screw portion 209 adapted to cooperate with a threaded portion 210 arranged in the opening 203. This type of coupling allows an easy solution for user to attach/detach the plug 204 to/from the opening 203.

[0056] Preferably, the plug 204 comprises a second part 211 made of heat-resistant plastic material, for attaching/detaching the plug to/from the opening 203, for example made of glass-filled nylon.

[0057] Fig.3C depicts a partial three-dimensional view of a garment care device 200 according to the invention using a deformable/collapsible structure for the enclosure 205, when a plug 204 is detached from the opening 203 of the garment care device.

[0058] Fig.3D depicts a partial three-dimensional view of a garment care device 200 according to the invention using a deformable/collapsible structure for the enclosure 205, when the plug 204 is attached to the opening 203 of the garment care device.

[0059] The enclosure 205 corresponds to the enclosure as depicted in Fig.7A and Fig.7B.

[0060] The tube assembly 206 is arranged so that it extends above and around the steam generator 202, in order to smooth its curvature between the first extremity EE1 and the second extremity EE2, and thus avoid any kinking of the tube assembly which would otherwise prevent the steam from easily circulating in the tube element.

[0061] As illustrated, the second extremity EE2 is for example connected to an outlet arranged on the stand bottom of the housing 201, next to the steam generator 202 on the side of the housing 201.

[0062] Alternatively to having a deformable/collapsible enclosure 205, the enclosure 205 is non-deformable along its longitudinal axis A1.

[0063] Fig.8A depicts schematically a first embodiment according to the invention using an enclosure 205 being non-deformable along its longitudinal axis A1.

[0064] The enclosure 205 is made of rigid material, preferably heat-resistant plastic material, such as glass-filled PP (Polypropylene), PBT (Polybutylene Terephthalate), glass-filled PBT (Polybutylene Terephthalate), Nylon, glass-filled Nylon.

[0065] The first extremity E1 is sealed to the opening 203 similarly as the solutions explained previously.

[0066] The contact surface S1 is an inside surface of the enclosure 205, and the portion P is a peripheral surface of the detachable plug 204. The plug 204 is thus able to navigate back and forth inside the enclosure, while ensuring an air-tight coupling between the contact surface S1 and the portion P, similarly as a piston.

[0067] Fig.8B depicts schematically a second embodiment according to the invention using an enclosure 205 being non-deformable along its longitudinal axis A1.

[0068] The embodiment of Fig.8B differs from Fig.8A in that it further comprises a seal 212 arranged on the peripheral surface of the plug 204 and coming in contact with the inside surface of the enclosure 205. The goal of seal 212 is to improve the sealing between the plug 204 and the inside surface of the enclosure 205.

[0069] This seal 212 is for example a ring shaped seal attached to the outer periphery of the plug 204.

[0070] Alternatively, the seal 212 may be chosen among the following types of seal:

- Collapsible seal,
- Cup-shaped seal, or
- O-ring seal.

[0071] Preferably, as illustrated, the tube assembly 206 is detachably mounted to the enclosure 205. In this case, the tube assembly 206 is a separate tube (for example made of rubber or plastic) attached to the enclosure 205 at its first extremity EE1.

[0072] Alternatively, the tube assembly 206 is moulded together with the enclosure 205.

[0073] Fig.9A depicts a partial cross-sectional view of a garment care device 200 according to the invention using a non-deformable enclosure 205, when a plug 204 is detached from the opening 203 of the garment care device.

[0074] Fig.9B depicts the view of Fig.9A, when the plug 204 is attached to the opening 203 of the garment care device.

[0075] Fig.9C depicts a three-dimensional exploded view of Fig.9A.

[0076] Compared to the embodiment of Fig.8A and Fig. 8B, the garment care device of Fig.9C further comprises a cylindrical sleeve 213 inserted in the enclosure 205.

[0077] The cylindrical sleeve 213 is made of rigid material, such as plastic, and comprises an opening 216 facing the first extremity EE1 of the tube assembly 206, so that when steam reaches the inside area of the enclosure 205, steam can exit via the tube assembly 206.

[0078] The goal of this cylindrical sleeve 213 is to provide a non-deformable surface against which the seal 212 can seal on it.

[0079] Note that the tube assembly 206 may also comprise a tube connector 215 attached (or molded together with) the base of the housing, to which the tube itself is attached, also schematically illustrated in Fig.5.

[0080] Preferably, a seal 214 is arranged next to the screw portion 209, in order to improve the sealing between the plug 204 and the opening 203 when the plug 204 is closing the opening 203.

[0081] Preferably, the plug 204 comprises at safety valve 217, as schematically represented in Fig.8B, as

well on Fig.9A and Fig.9B.

[0082] The safety valve allows that when the plug 204 is attached to the opening 203, in case the steam pressure in the steam generator 202 would go beyond a certain acceptable safety threshold, the steam in the steam generator 202 can exit the steam generator 202, enter the enclosure 205, flow along the tube assembly 206, and be discharged at the second extremity EE2.

[0083] This safety valve thus prevents steam pressure in the steam generator 202 going beyond a certain acceptable safety threshold.

[0084] The safety valve is arranged along a path 218 formed in the plug 204, for fluidly linking the steam generator 202 and the enclosure 205 when the safety valve opens.

[0085] For example, the safety valve comprises a valve 219, for example made of heat-resistant plastic, loaded by a spring 220 arranged in a cavity of the plug 204. The valve is in contact with steam inside the steam generator 202. When the steam pressure exerts a force onto the valve that overcomes the force of the spring, the valve opens, and the steam flows along the path until entering the enclosure 205. The steam thus flows along the tube assembly 206, and is discharged at the second extremity EE2.

[0086] Preferably, the garment care device 200 is a pressurized steam generator of the type described along with Fig.1A.

[0087] Alternatively (not shown), the garment care device 200 is a stand garment steamer.

[0088] The above embodiments as described are only illustrative, and not intended to limit the technique approaches of the present invention. Although the present invention is described in details referring to the preferable embodiments, those skilled in the art will understand that the technique approaches of the present invention can be modified without departing from the protective scope of the claims of the present invention. In the claims, the word "comprising" does not exclude other elements or steps, and the indefinite article "a" or "an" does not exclude a plurality. Any reference signs in the claims should not be construed as limiting the scope.

Claims

1. Garment care device (200) comprising:

   - a housing (201),
   - a steam generator (202) arranged in said housing (201),
   - an opening (203) arranged in said steam generator (202) for accessing an inside part of the steam generator (202), the opening (203) being provided in a tubular portion extending from a wall of the steam generator (202) towards the housing (201),
   - a detachable plug (204) for closing said opening (203),
   - an enclosure (205) comprising a first extremity (E1) sealed to said tubular portion, and a contact surface (S1) adapted to make contact with a portion (P) of said detachable plug (204) when the detachable plug (204) is closing said opening (203), thereby to hermetically seal said enclosure (205) from the steam generator (202),
   - a tube assembly (206) comprising a first end (EE1) being fluidly connected to an inside area of said enclosure (205), and a second end (EE2) opening outside said housing (201), **characterized in that** the enclosure (205) is provided within the housing (201), and the first end (EE1) of the tube assembly (206) is connected to the enclosure (205) inside the housing (201).

2. Garment care device as claimed in claim 1, wherein said first extremity (E1) is attached around said opening (203) by any one of the following sealing:

   - a seal (SL1) mounted radially between an outer surface of said opening (203) and said first extremity (E1),
   - a seal (SL2) mounted by hugging between said opening (203) and said first extremity (E1),
   - an O-ring seal (SL3) mounted between said opening (203) and said first extremity (E1),
   - a grip-in groove (G1) arranged in said opening (203).

3. Garment care device as claimed in claim 1 or 2, wherein:

   - the enclosure (205) is resiliently deformable along its longitudinal axis (A1), and
   - said contact surface (S1) is a second extremity (E2) opposite said first extremity (E1),
   - said portion (P) is a front surface of said detachable plug (204) facing said opening (203) when the detachable plug (204) is closing said opening (203).

4. Garment care device as claimed in claim 3, wherein the enclosure (205) is a bellows.

5. Garment care device as claimed in claim 3, wherein the enclosure (205) is made of silicone rubber or EPDM material.

6. Garment care device as claimed in claim 1 or 2, wherein:

   - the enclosure (205) is non-deformable along its longitudinal axis (A1),
   - said contact surface (S1) is an inside surface of said enclosure (205),
   - said portion (P) is a peripheral surface of said

detachable plug (204).

7. Garment care device as claimed in claim 6, further comprising a seal (212) arranged on said peripheral surface and coming in contact with said inside surface.

8. Garment care device as claimed in any one of the preceding claims, wherein said tube assembly (206) has an internal cross-section of at least 5 mm^2.

9. Garment care device as claimed in any one of the preceding claims, wherein said second end (EE2) is connected to a bottom part of said housing (201).

10. Garment care device as claimed in any one of the preceding claims, further comprising a safety valve (217) arranged along a path (218) formed in said plug (204), for fluidly linking the steam generator (202) and the enclosure (205) when the safety valve (217) opens.

11. Garment care device as claimed in any one of the preceding claims, wherein the tube assembly (206) is detachably mounted to the enclosure (205).

12. Garment care device as claimed in any one of the preceding claims, wherein the enclosure (205) and the tube assembly (206) are moulded together.

13. Garment care device as claimed in any one of the preceding claims, wherein said enclosure (205) is made of heat-resistant material.

14. Garment care device as claimed in any one of the preceding claims, wherein the opening (203) comprises a threaded portion (210), and wherein said detachable plug (204) comprises a first part made of metal material comprising a screw portion (209) adapted to cooperate with the threaded portion (210).

15. Garment care device as claimed in claim 14, wherein said detachable plug (204) comprises a second part made of heat-resistant plastic material, for attaching/detaching the plug to/from the opening (203).

Patentansprüche

1. Kleidungspflegegerät (200), umfassend:

- Ein Gehäuse (201),
- einen im besagten Gehäuse (201) angeordneten Dampferzeuger (202),
- eine im besagten Dampferzeuger (202) angeordnete Öffnung (203) für den Zugang zu einem inneren Teil vom Dampferzeuger (202), wobei die Öffnung (203) in einem rohrförmigen Abschnitt vorgesehen ist, der sich von einer Wand des Dampferzeugers (202) in Richtung des Gehäuses (201) erstreckt,
- einen lösbaren Stopfen (204) zum Verschließen der besagten Öffnung (203),
- einen umschlossenen Raum (205), der ein erstes Ende (E1) umfasst, das an dem besagten röhrenförmigen Abschnitt abgedichtet ist, und eine Kontaktfläche (S1), die angepasst ist, Kontakt mit einem Teil (P) des besagten abnehmbaren Stopfens (204) herzustellen, wenn der abnehmbare Stopfen (204) die besagte Öffnung (203) verschließt, um dadurch den umschlossenen Raum (205) hermetisch vom Dampferzeuger (202) abzudichten,
- eine Schlauchanordnung (206), die ein erstes Ende (EE1) umfasst, das mit einem inneren Bereich des besagten umschlossenen Raumes (205) strömungstechnisch verbunden ist, und ein zweites Ende (EE2), dass sich außerhalb des besagten Gehäuses (201) öffnet, **dadurch gekennzeichnet, dass** der umschlossene Raum (205) innerhalb des Gehäuses (201) vorgesehen ist, und das erste Ende (EE1) der Rohrbaugruppe (206) ist mit dem umschlossenen Raum (205) im Inneren des Gehäuses (201) verbunden.

2. Kleidungspflegegerät nach Anspruch 1, wobei das besagte erste Ende (E1) um die Öffnung (203) herum durch eine der folgenden Dichtungen befestigt ist:

- eine Dichtung (SL1), die radial zwischen einer Außenfläche der besagten Öffnung (203) und besagtem ersten Ende (E1) angebracht ist,
- eine Dichtung (SL2), die durch Presssitz zwischen der besagten Öffnung (203) und dem besagten ersten Ende (E1) angebracht ist,
- eine O-Ring-Dichtung (SL3), die zwischen der besagten Öffnung (203) und dem besagten ersten Ende (E1) angebracht ist,
- eine in der besagten Öffnung (203) angeordnete Eingreifnut (G1).

3. Kleidungspflegegerät nach Anspruch 1 oder 2, wobei:

- der umschlossene Raum (205) entlang seiner Längsachse (A1) elastisch verformbar ist, und
- die besagte Kontaktfläche (S1) ein zweites Ende (E2) gegenüber dem besagten ersten Ende (E1) ist,
- der besagte Abschnitt (P) eine Vorderfläche des besagten abnehmbaren Stopfens (204) ist, welche der besagten Öffnung (203) gegenüberliegt, wenn der abnehmbare Stopfen (204) die

besagte Öffnung (203) verschließt.

4. Kleidungspflegegerät nach Anspruch 3, wobei der umschlossene Raum (205) ein Faltenbalg ist.

5. Kleidungspflegegerät nach Anspruch 3, wobei der umschlossene Raum (205) aus Silikonkautschuk oder EPDM-Material hergestellt ist.

6. Kleidungspflegegerät nach Anspruch 1 oder 2, wobei:

- der umschlossene Raum (205) entlang seiner Längsachse (Al) nicht verformbar ist,
- die besagte Kontaktfläche (S1) eine Innenfläche des besagten umschlossenen Raumes (205) ist,
- der besagte Abschnitt (P) eine Umfangsoberfläche des besagten abnehmbaren Stopfens (204) ist.

7. Kleidungspflegegerät nach Anspruch 6, weiterhin umfassend eine Dichtung (212) angeordnet auf besagter Umfangsoberfläche und welche mit besagter Innenoberfläche in Kontakt kommt.

8. Kleidungspflegegerät nach einem der vorhergehenden Ansprüche, wobei die besagte Schlauch-Baugruppe (206) einen Innenquerschnitt von mindestens 5 mm2 hat.

9. Kleidungspflegegerät nach einem der vorhergehenden Ansprüche, wobei das besagte zweite Ende (EE2) mit einem unteren Teil des Gehäuses (201) verbunden ist.

10. Kleidungspflegegerät nach einem der vorhergehenden Ansprüche, weiter umfassend ein Sicherheitsventil (217), das entlang eines im besagten Stopfen (204) ausgebildeten Pfades (218) zur strömungstechnischen Verbindung von Dampferzeuger (202) und dem umschlossenen Raum (205) angeordnet ist, wenn das Sicherheitsventil (217) öffnet.

11. Kleidungspflegegerät nach einem der vorhergehenden Ansprüche, wobei die Schlauchbaugruppe (206) abnehmbar am umschlossenen Raum (205) montiert ist.

12. Kleidungspflegegerät nach einem der vorhergehenden Ansprüche, wobei der umschlossene Raum (205) und die Schlauchbaugruppe (206) zusammen geformt werden.

13. Kleidungspflegegerät nach einem der vorhergehenden Ansprüche, wobei besagter umschlossener Raum (205) aus hitzebeständigem Material hergestellt ist.

14. Kleidungspflegegerät nach einem der vorhergehenden Ansprüche, wobei die Öffnung (203) einen Gewindeabschnitt (210) umfasst, und wobei der besagte abnehmbare Stopfen (204) einen ersten Teil aus Metallmaterial umfasst, umfassend einen Schraubenabschnitt (209), angepasst, um mit dem Gewindeabschnitt (210) zusammenzuwirken.

15. Kleidungspflegegerät nach Anspruch 14, wobei der besagte abnehmbare Stopfen (204) einen zweiten Teil aus hitzebeständigem Kunststoff zum Anbringen/Abziehen des Stopfens zur/von der Öffnung (203) umfasst.

Revendications

1. Un dispositif d'entretien des vêtements (200) comprend :

- un boîtier (201);
- un générateur de vapeur (202) disposé dans ledit boîtier (201),
- une ouverture (203) disposée dans ledit générateur (202) pour accéder à une partie interne du générateur de vapeur (202), l'ouverture (203) étant fournie dans une partie tubulaire s'étendant d'une paroi au générateur de vapeur (202) vers le boîtier (201),
- un bouchon amovible (204) pour fermer ladite ouverture (203),
- un coffre (205) comprenant une première extrémité (E1) scellée à la partie tubulaire, et une surface de contact (S1) adaptée pour entrer en contact avec une partie (P) dudit bouchon amovible (204) lorsque le bouchon amovible (204) ferme ladite ouverture (203), permettant ainsi de sceller ladite fermeture (205) du générateur de vapeur (202),
- un ensemble de tubes (206) comprenant une première extrémité (EE1) étant liée de manière fluide à une zone intérieure (205), et une seconde extrémité (EE2) une ouverture à l'extérieur dudit boîtier (201), **caractérisé par le fait que** dans ledit coffre (205) est fourni dans le boîtier (201), et la première extrémité (EE1) de l'ensemble de tubes (206) est liée au coffre (205) à l'intérieur du boîtier (201).

2. Un dispositif d'entretien des vêtements comme revendiqué dans la revendication 1, où ladite première extrémité (E1) est attachée autour de ladite ouverture (203) par l'un des scellements suivants:

- un joint d'étanchéité (SL1) monté de façon radiale entre une surface extérieure de ladite ouverture (203) et ladite première extrémité (E1),

- un joint d'étanchéité (SL2) monté par étreinte entre ladite ouverture (203) et ladite première extrémité (E1),
- un joint torique d'étanchéité (SL3) monté entre ladite ouverture (203) et ladite première extrémité (E1),
- une rainure de préhension (G1) disposée dans ladite ouverture (203).

3. Un dispositif d'entretien des vêtements comme revendiqué dans la revendication 1 ou 2, où:

- le coffre (205) est déformable de manière élastique le long de l'axe longitudinal (A1), et
- ladite surface de contact (S1) est une seconde extrémité (E2) à l'opposé de ladite première extrémité (E1),
- ladite partie (P) est une surface frontale dudit bouchon amovible (204) faisant face à ladite ouverture (203) lorsque le bouchon amovible (204) ferme ladite ouverture (203).

4. Le dispositif d'entretien des vêtements dans la revendication 3, où le coffre (205) est un soufflet.

5. Le dispositif d'entretien des vêtements dans la revendication 3, où le coffre (205) est fait de caoutchouc silicone ou en matériau EPDM.

6. Un dispositif d'entretien des vêtements comme revendiqué dans la revendication 1 ou 2, où:

- le coffre (205) est n'est pas déformable le long de l'axe longitudinal (A1),
- ladite surface de contact (S1) est une surface interne dudit coffre (205),
- ladite partie (P) est une surface périphérique dudit bouchon amovible (204).

7. Un dispositif d'entretien des vêtements dans la revendication 6 comprend également un scellement (212) disposé sur ladite surface périphérique et entre en contact avec ladite surface interne.

8. Un dispositif d'entretien des vêtements selon l'une quelconque des revendications précédentes, où l'ensemble de tubes (206) possède une section transversale interne d'au moins 5 mm^2.

9. Un dispositif d'entretien des vêtements comme revendiqué selon l'une quelconque des revendications précédentes, où ladite seconde extrémité (EE2) est liée à la partie inférieure dudit boîtier (201).

10. Un dispositif d'entretien des vêtements selon l'une quelconque des revendications précédentes comprend également une vanne de sécurité (217) disposée le long d'une trajectoire (218) formée dans ledit bouchon (204), pour lier de manière fluide le générateur de vapeur (202) et le coffre (205) lorsque la vanne de sécurité (217) s'ouvre.

11. Un dispositif d'entretien des vêtements selon l'une quelconque des revendications précédentes, où l'ensemble de tubes (206) est monté de manière détachable au coffre (205).

12. Un dispositif d'entretien des vêtements comme revendiqué selon l'une quelconque des revendications précédentes, où le coffre (205) et l'ensemble de tubes (206) sont moulés ensemble.

13. Un dispositif d'entretien des vêtements comme revendiqué selon l'une quelconque des revendications précédentes, où ledit coffre (205) est fait de matériaux résistant à la chaleur.

14. Un dispositif d'entretien des vêtements comme revendiqué selon l'une quelconque des revendications précédentes, où l'ouverture (203) comprend une partie filetée (210), et où ledit bouchon détachable (204) comprend une première partie fait de matériaux en métal comprenant une partie de vis (209) adaptées pour coopérer avec la partie filetée (210).

15. Un dispositif d'entretien des vêtements comme revendiqué dans la revendication 14, où ledit bouchon amovible (204) comprend une seconde partie faite de matériau résistant à la chaleur en plastique, pour attacher/détacher le bouchon de l'ouverture (203).

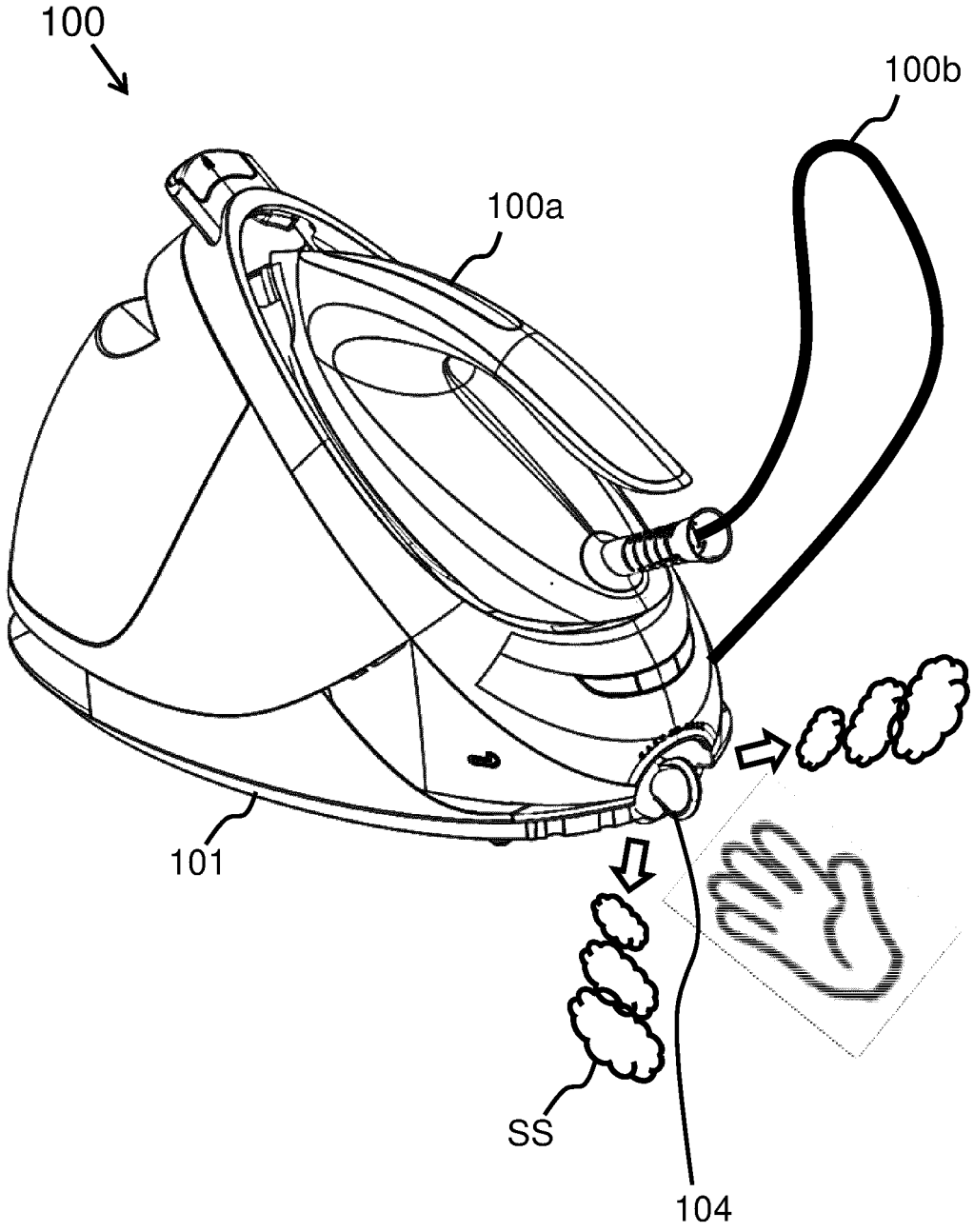

FIG.1A

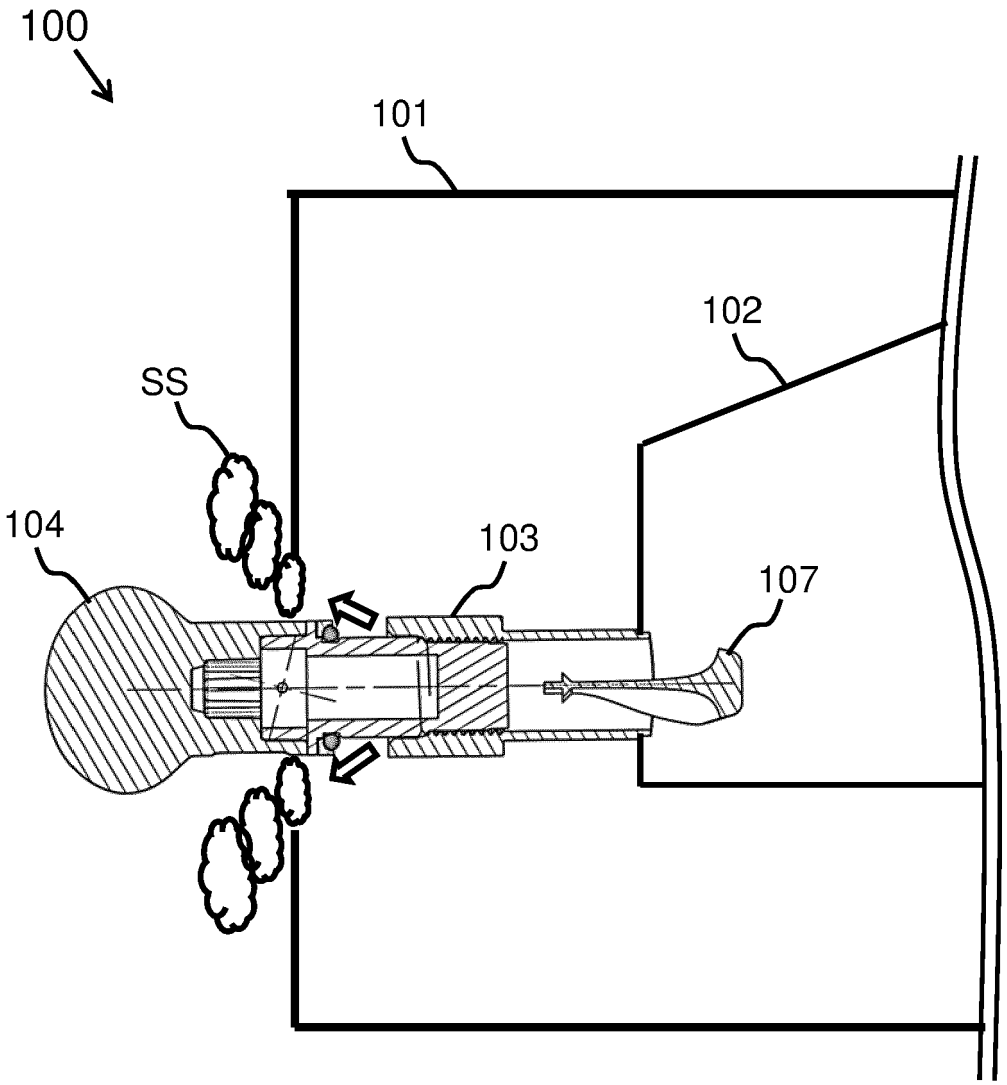

FIG.1B

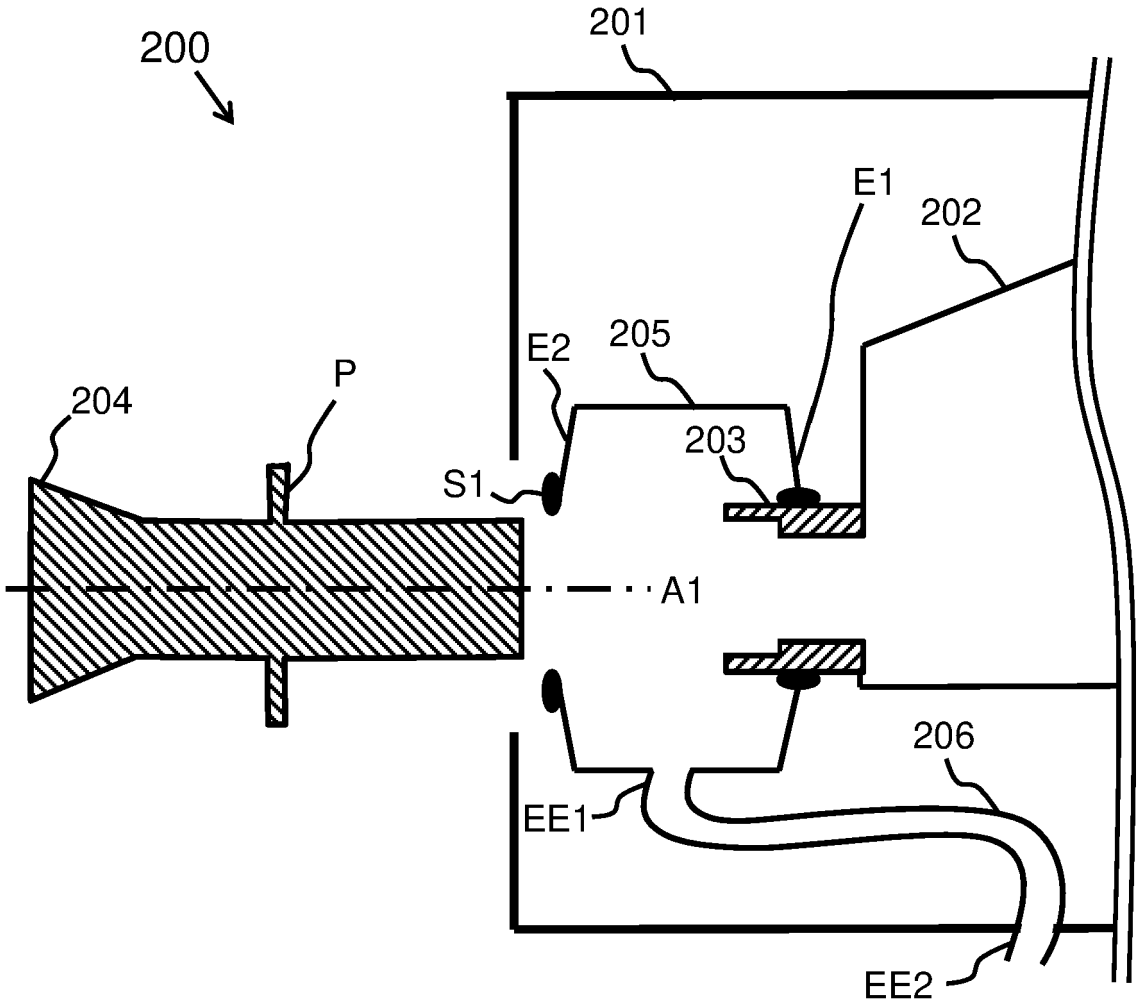

FIG.2A

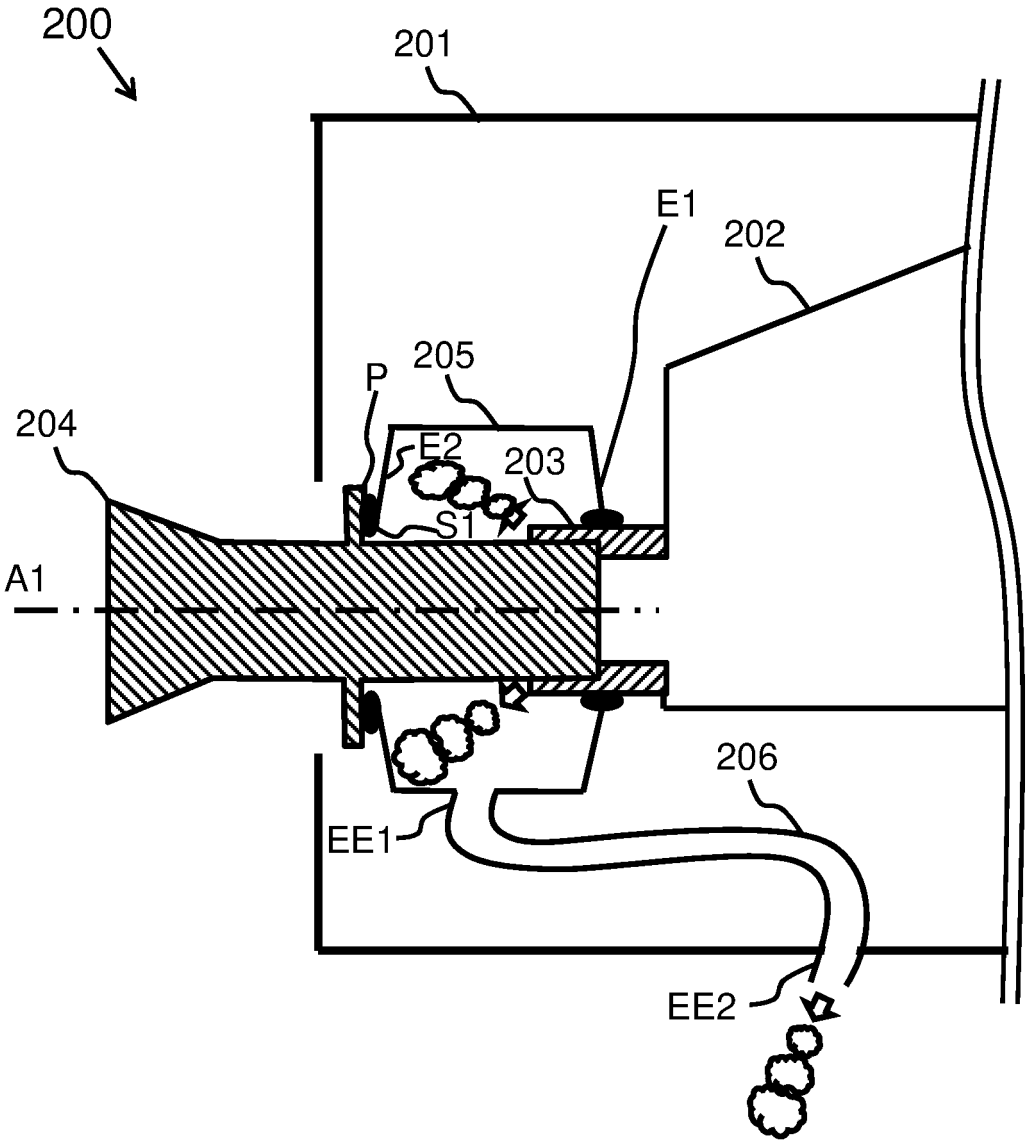

FIG.2B

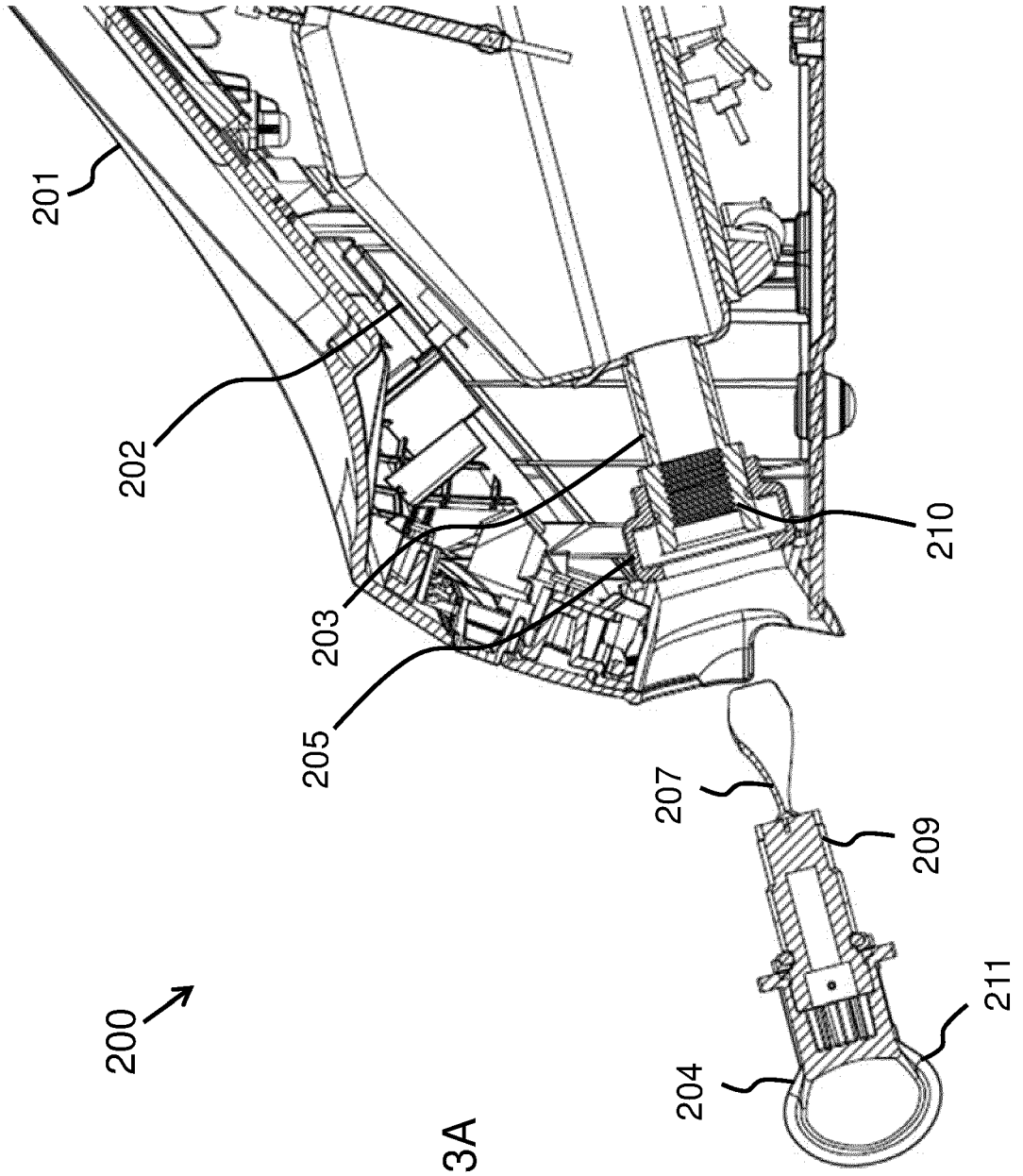

FIG.3A

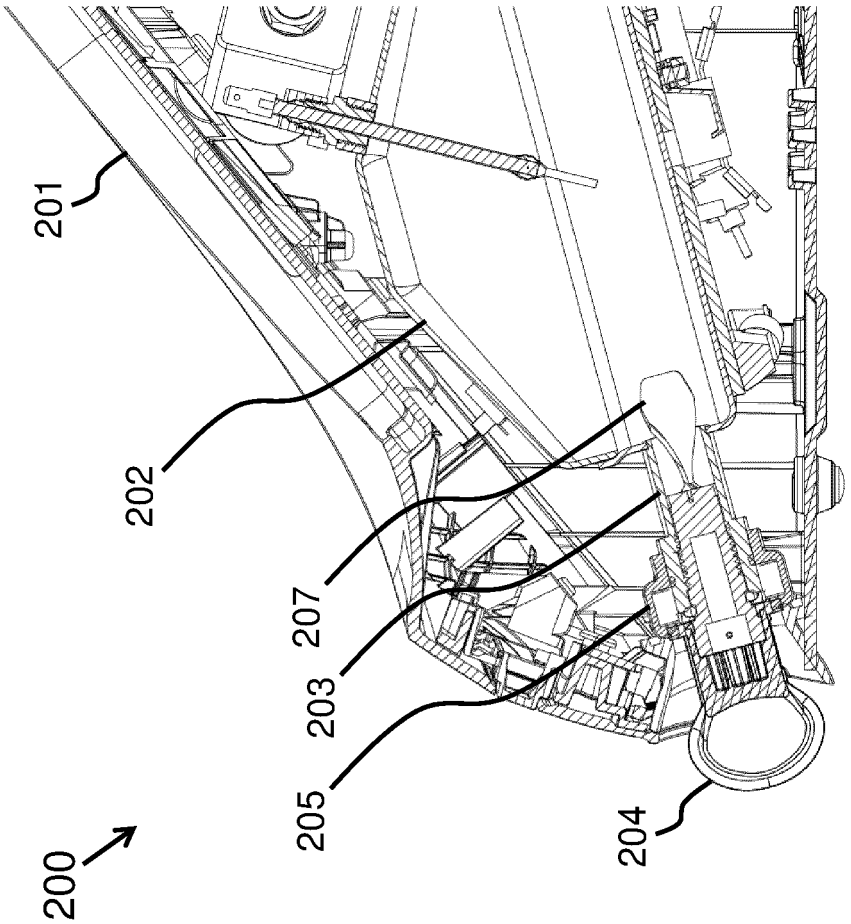

FIG.3B

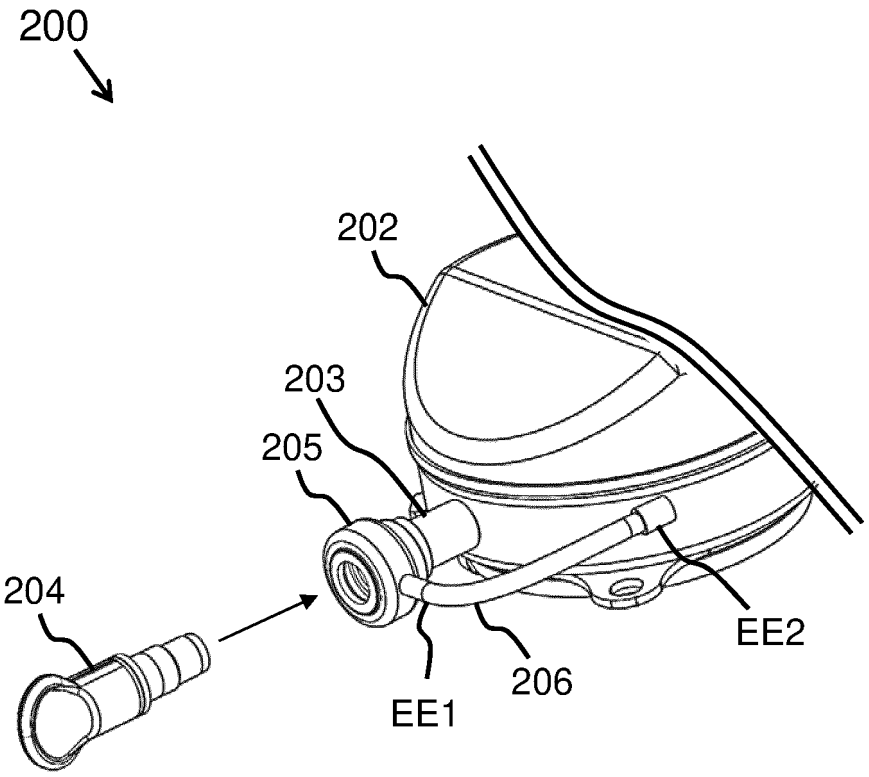

FIG.3C

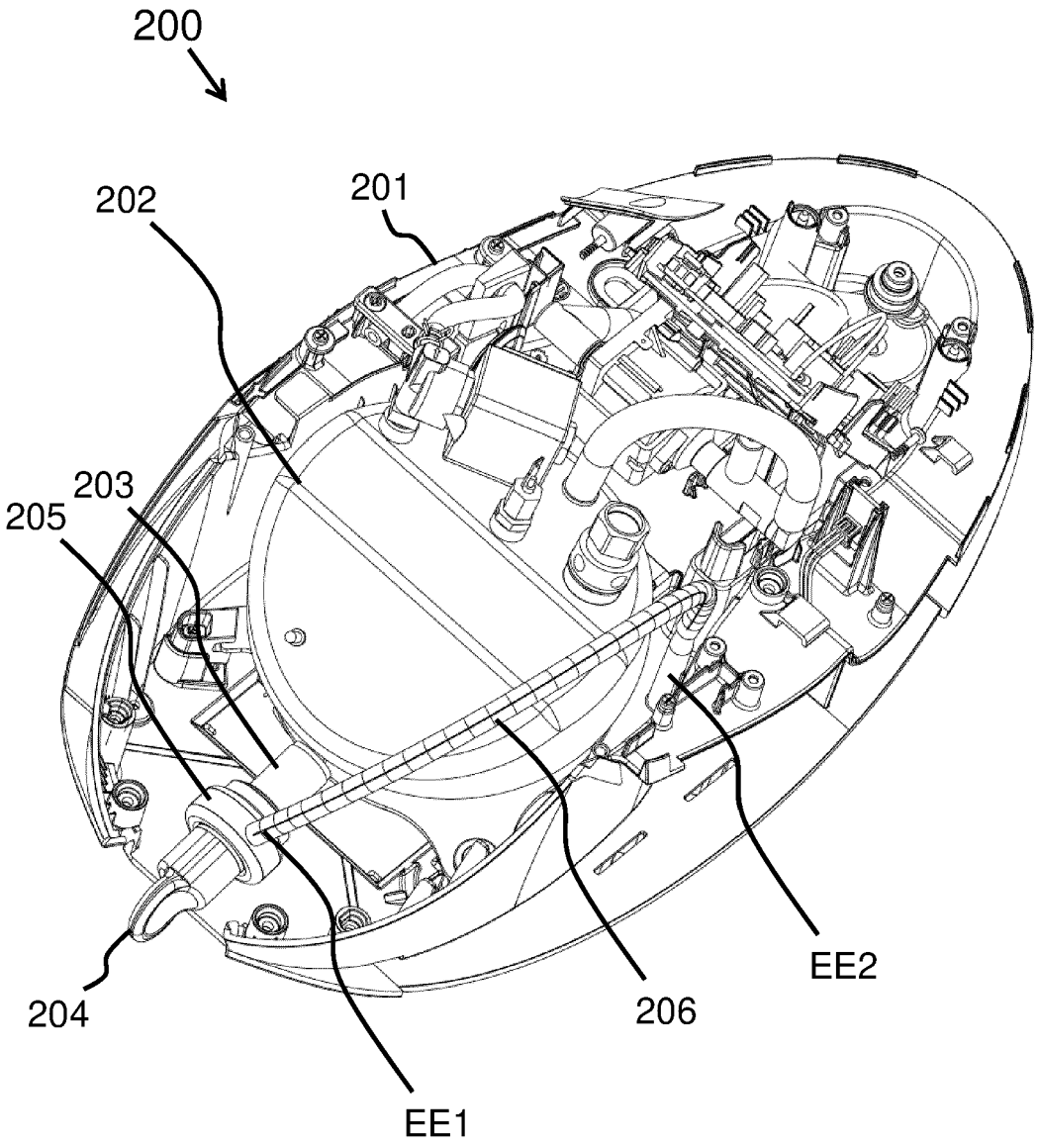

FIG.3D

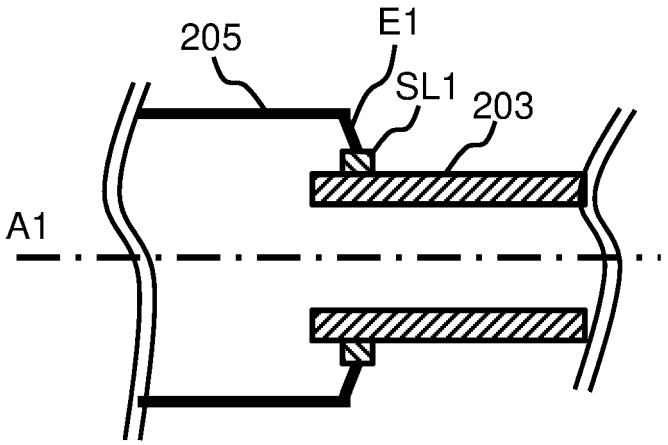

FIG.4A

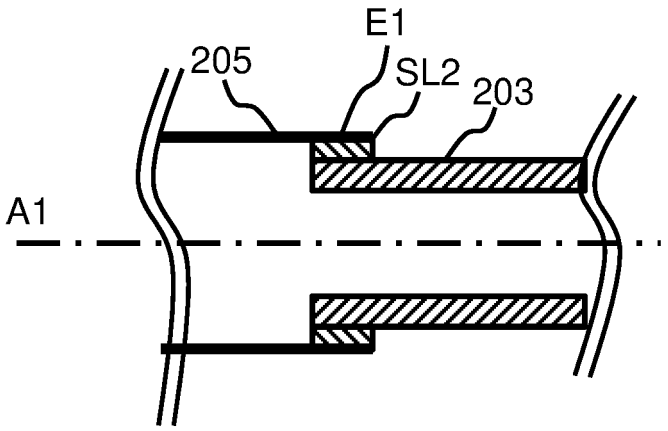

FIG.4B

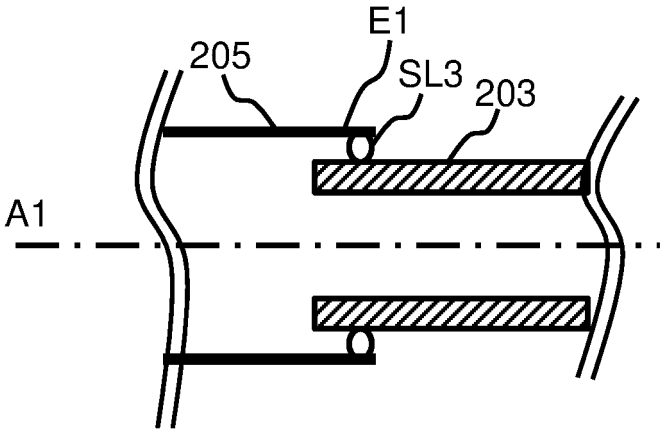

FIG.4C

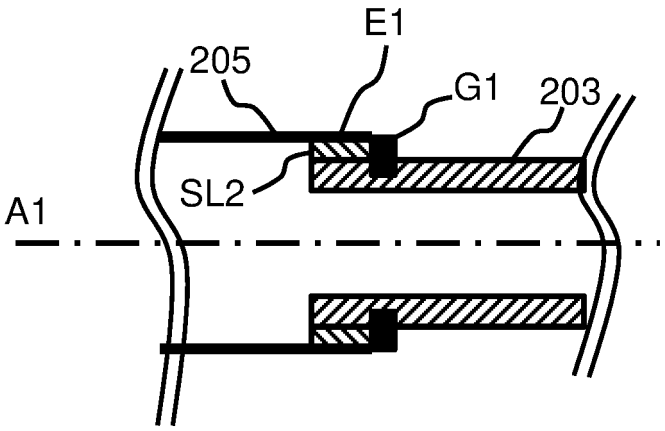

FIG.4D

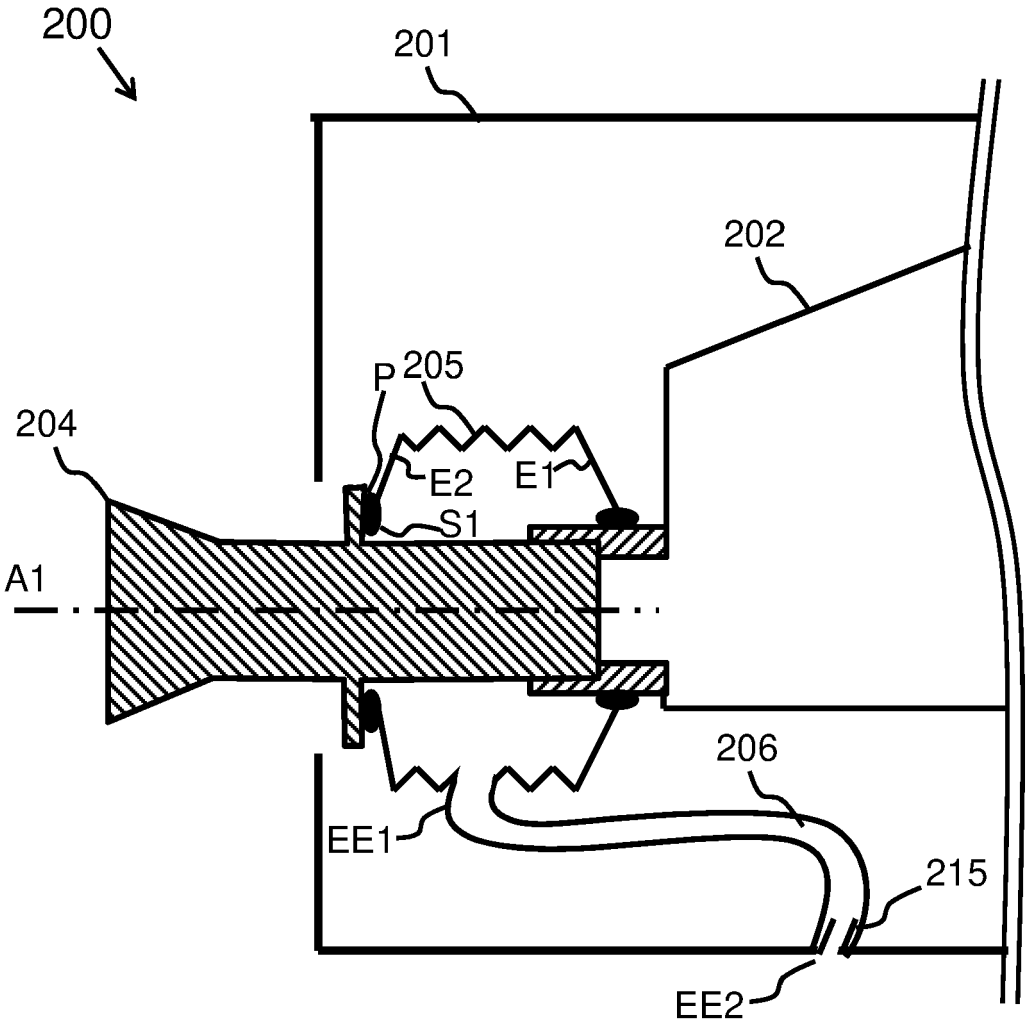

FIG.5

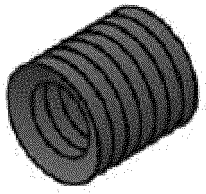

FIG.6A

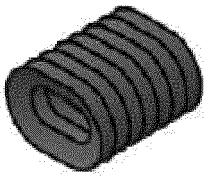

FIG.6B

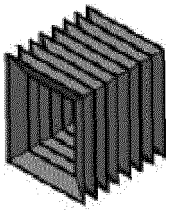

FIG.6C

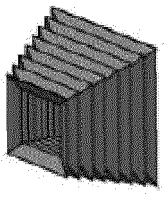

FIG.6D

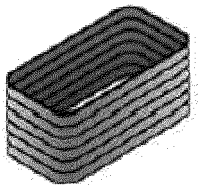

FIG.6E

FIG.6F

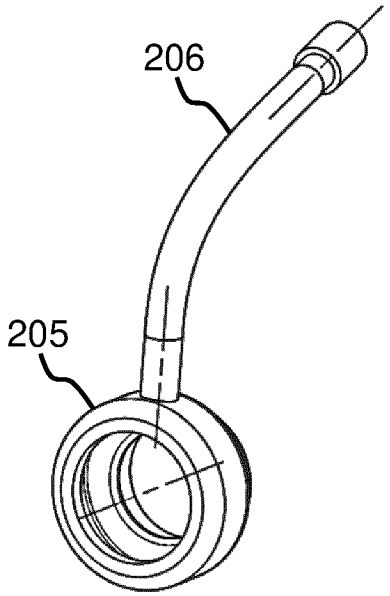

FIG.7A

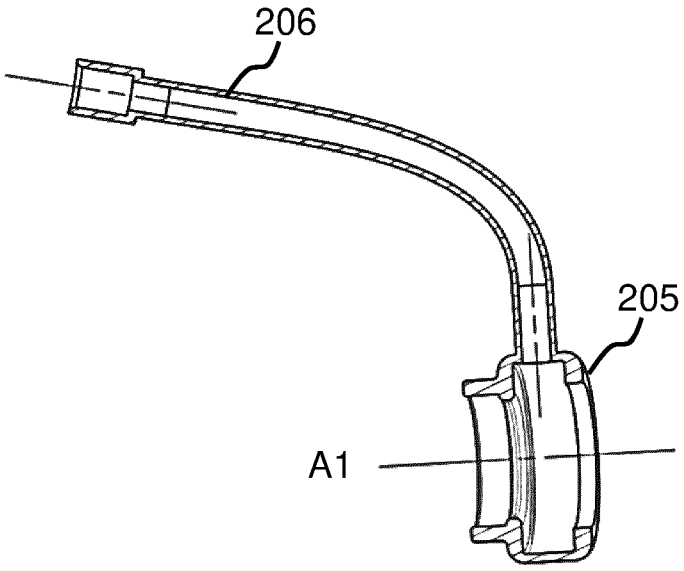

FIG.7B

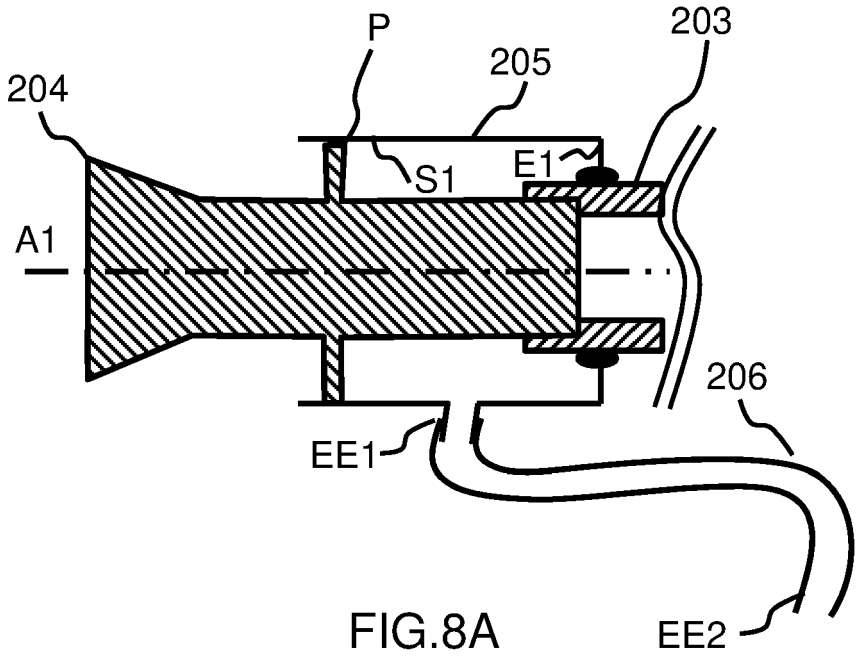
P
205
203
204
S1
E1
A1
206
EE1
EE2

FIG.8A

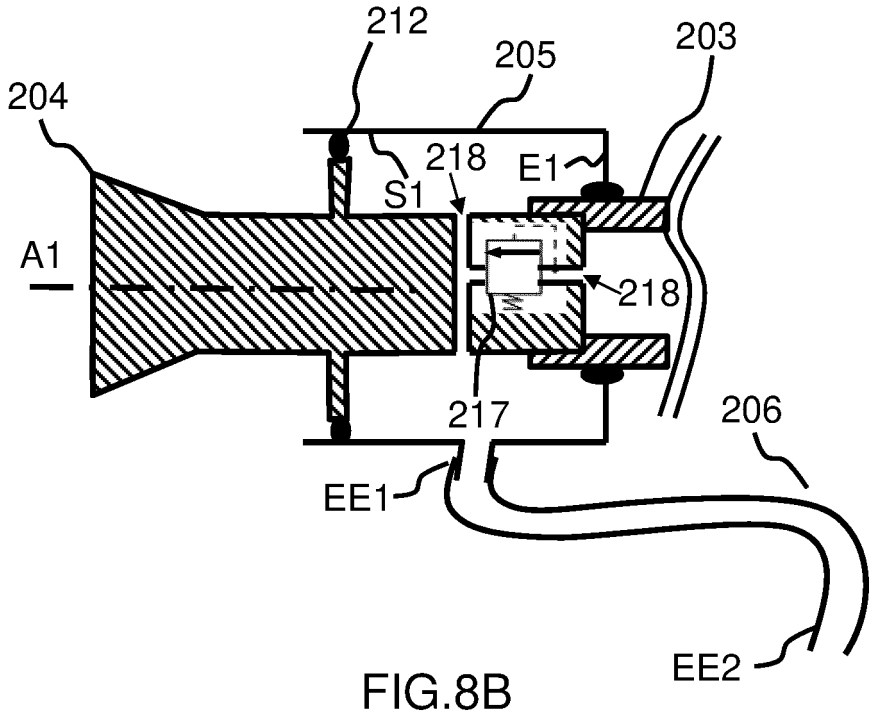
212
205
203
204
218
S1
E1
A1
218
217
206
EE1
EE2

FIG.8B

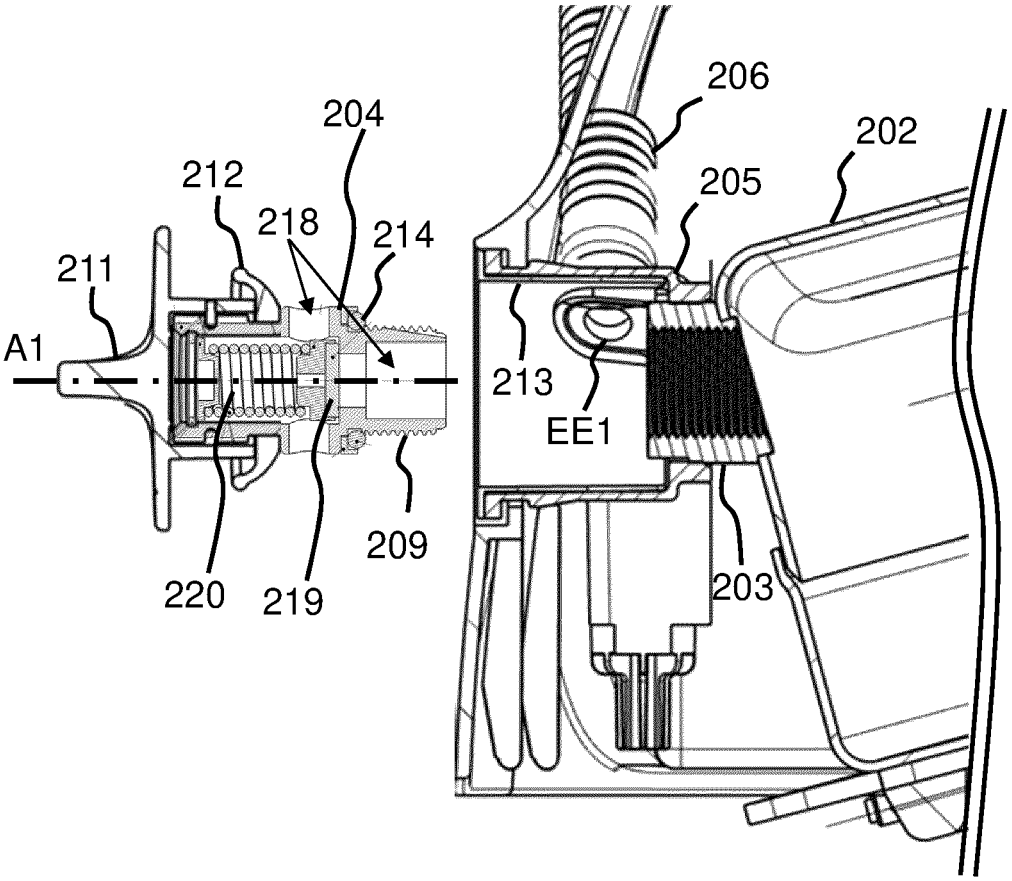
206
204
202
212
205
218
214
211
A1
213
EE1
209
203
220
219

FIG.9A

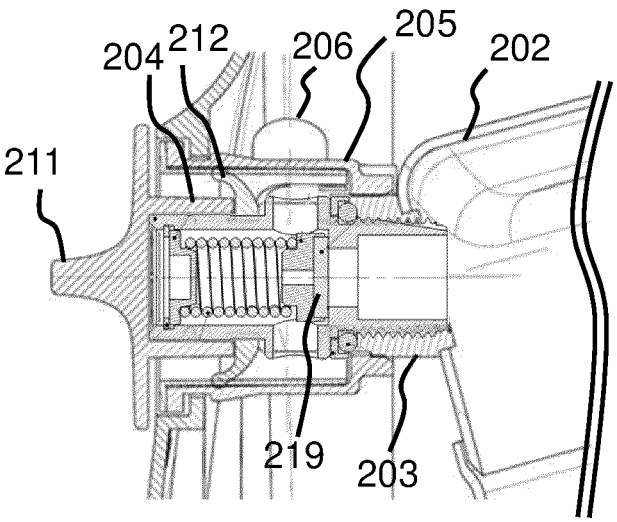
205
204
212
206
202
211
219
203

FIG.9B

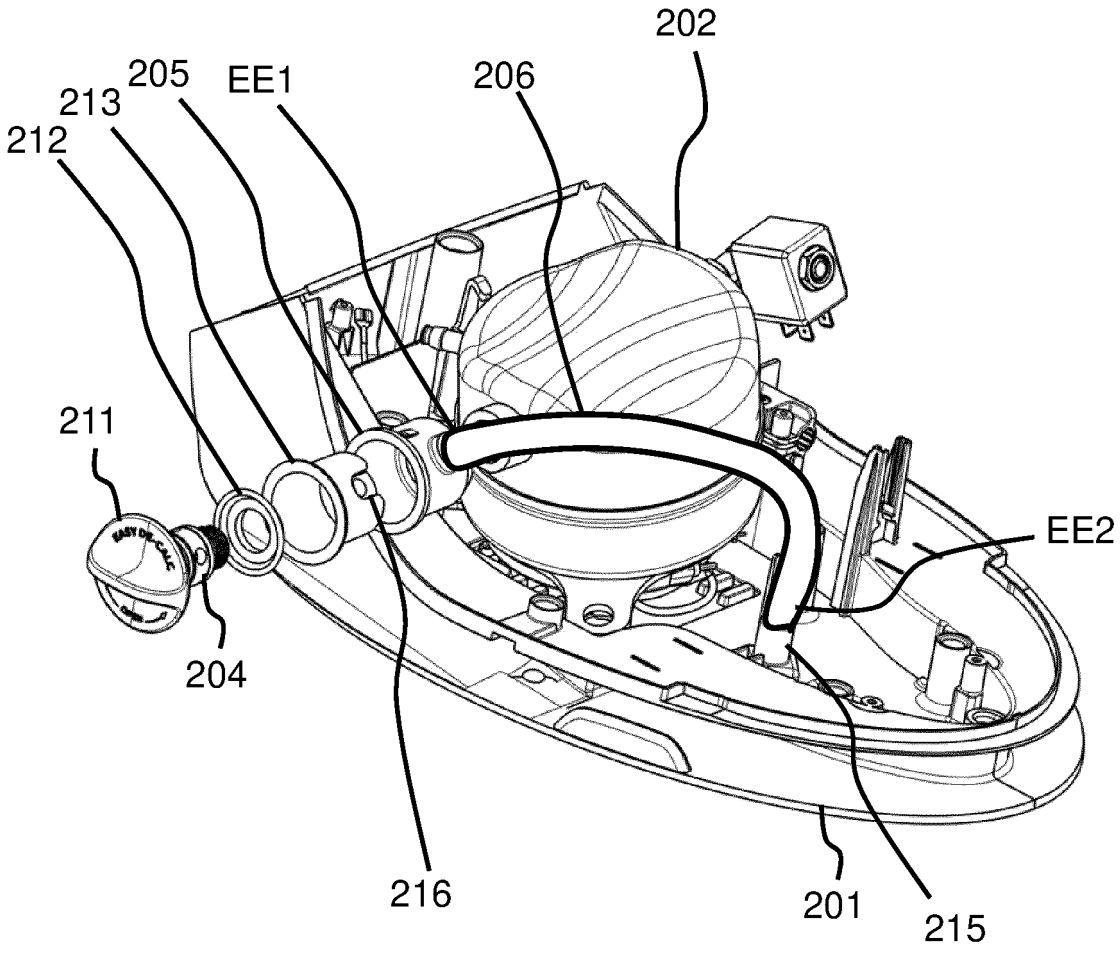

FIG.9C

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

- GB 2365028 A **[0010]**
- EP 2845944 A1 **[0011]**