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(54) **STEAM GENERATOR WITH STEAM CHAMBER AND DOSING HOLE ARRANGED AT PROXIMITY OF A REAR PORTION OF THE STEAM CHAMBER**

DAMPFERZEUGER MIT DAMPFKAMMER UND DOSIERLOCH NAHE EINES HINTEREN TEILS DER DAMPFKAMMER

GÉNÉRATEUR DE VAPEUR COMPORTANT UNE CHAMBRE DE VAPEUR ET UN TROU DE DOSAGE DISPOSÉS À PROXIMITÉ D'UNE PARTIE ARRIÈRE DE LA CHAMBRE DE VAPEUR

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Description

FIELD OF THE INVENTION

[0001] The invention relates to a steam generator, in particular to a steam generator for a garment steamer.

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

BACKGROUND OF THE INVENTION

[0003] Due to the compact size and light weight requirement for the steam generator intended to be implemented in handheld steamers, the risk of a non-complete evaporation of steam/water which is dosed in the steam chamber, is increased. As a result, water droplets may be spread over the garment being treated. This problem is known as "spitting".

[0004] To overcome this problem, the steam/water path, also called steam channel, is normally designed as a labyrinth, and is used to extend the path where water is evaporated and to increase the contact surface and time for maximizing evaporation. The steam channel is also used to guide the flow of steam up to reaching the steam outlets of the steam chamber.

[0005] Traditionally, the dosing hole for dosing water and/or steam into such a steam generator is located near the front portion of the steam chamber, relatively close to the steam vents to extend the length of the steam channel. The steam channel is shaped such that evaporated steam first travels along the steam channel in direction of a rear portion of the steam chamber, then travels back in direction of the front portion of the steam chamber, where steam will exit the steam chamber via some steam vents.

[0006] Traditionally, the steam chamber is closed with a separate cover. The steam chamber and the cover are usually assembled via a mechanical male/female assembly, for example by using ribs made on the upper part of the steam chamber tightly cooperating with grooves stamped on the cover. Some studs elements may also additionally be used to strengthen the assembly, for example studs extending upwards from internal walls of the steam chamber, which are cooperating tightly with holes made in the cover. The steam chamber and the cover are then pressed against each other to create mechanical sealing. Optionally, a gasket extending along those peripheral walls or internal vertical walls defining the steam channel, may additionally be used to further improve the sealing. Additionally, sealing paste may also be used on the mechanical male/female assembly sealing to further improve the water tightness.

[0007] An example of such a known steam generator is depicted in Fig. 1A, Fig. 1B and Fig. 1C. Fig. 1A depicts a first view of a steam generator 100 according to the prior art, Fig. 1B depicts a second view of a steam generator 100 as depicted in Fig. 1, and Fig. 1C depicts an internal view of a steam generator 100 as depicted in Fig. 1.

[0008] As depicted in Fig. 1A, the steam generator 100

comprises a steam chamber 101 for generating steam. The steam chamber 101 extends between a front portion FP and a rear portion RP of the steam chamber 101. At least one steam outlet 102 is arranged at the front portion FP and receives steam from the steam chamber 101. The steam generator 100 also comprises a heating element 103 for heating the steam chamber 101. The steam generator 100 also comprises a cover 104 adapted to take a closed position for closing the steam chamber 101, as illustrated in Fig. 1B. The steam generator 100 also comprises a dosing hole 105 arranged in the cover 104, for receiving water and/or steam from outside the steam generator 100. The dosing hole 105 is arranged at proximity of the front portion FP when the cover 104 is in the closed position. The steam generator 100 also comprises a steam channel 106 extending between the dosing hole 105 and the steam outlet 102. A gasket G1 is arranged between internal vertical walls of the steam channel 106, and the cover. Fig. 1C illustrates in dotted lines the back and forth steam path between the dosing point and the steam outlets 102.

[0009] In the steam chamber using this type of sealing between the steam chamber and the cover, it may happen that the sealing function is compromised. This may happen for example when internal pressure has partially deformed the cover where the sealing was initially made, or when the gasket gets deteriorated over time resulting in a certain porosity or permeability. When the sealing function is compromised, some water droplets in the area where is arranged the dosing hole, so relatively close to the steam outlets, may directly be pushed across the internal walls forming the steam channel at the proximity of the steam outlets, and thus exit the steam outlets before being evaporated. This will cause spitting at the exit of the steam chamber. The user experience will be affected, because water droplets will be spread on the garment being treated.

[0010] A steam generator with the features of the preamble of claim 1 is known from US 3 805 425 A.

[0011] This invention provides a new design to overcome above-mentioned problems.

OBJECT AND SUMMARY OF THE INVENTION

[0012] It is an object of the invention to propose an improved steam generator which substantially alleviates or overcomes the problems mentioned above.

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

[0014] To this end, the steam generator according to the invention comprises:

- a steam chamber for generating steam, said steam chamber extending between a front portion and a rear portion,
- at least one steam outlet arranged at said front portion and receiving steam from said steam cham-

ber,

- a heating element for heating the steam chamber,
- a cover adapted to take a closed position for closing said steam chamber,
- a dosing hole arranged in said cover, for receiving water and/or steam from outside said steam generator, said dosing hole being arranged at proximity of said rear portion when said cover is in said closed position, wherein said heating element is a tubular heating element extending over the surface of the steam chamber by defining a nested double-loop shape.

[0015] Arranging the dosing hole at proximity of the rear portion of the steam chamber, when the sealing between the steam chamber and the cover is compromised, prevents water droplets in the area where is arranged the dosing hole, from reaching the steam outlets, contrary to the steam generator of the prior art. Indeed, the relatively large distance between the dosing hole and the steam outlets makes it very difficult to have those water droplets passing across a plurality of internal walls forming the steam channel, up to reaching the steam outlets.

[0016] As a result, even if the sealing between the steam chamber and the cover gets compromised, the risk to see water droplets spitting through the steam outlets is very limited, which is very advantageous when this steam generator is implemented in a handheld steamer. The user experience of ironing garments is thus improved.

[0017] Moreover, arranging the dosing hole at proximity of the rear portion of the steam chamber means that the most energy absorbing area is around this rear portion. As a result, if the steam chamber is energized uniformly, the coolest point of the steam chamber will be around this rear portion. This also means that the front portion of the steam chamber will keep at a relatively higher temperature, which will further prevent any spitting problem that could be caused by condensation at the steam outlets.

[0018] Detailed explanations and other aspects of the invention will be given below.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] 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 a first view of a steam generator according to the prior art,
 Fig. 1B depicts a second view of a steam generator as depicted in Fig. 1A,
 Fig. 1C depicts an internal view of a steam generator as depicted in Fig. 1A,

Fig.2A depicts a first view of a steam generator according to the invention,

Fig.2B depicts a second view of a steam generator as depicted in Fig.2A,

Fig.2C depicts a first embodiment of a steam generator according to the invention,

Fig.2D depicts a second embodiment of a steam generator according to the invention,

Fig.2E depicts a variant of the embodiment depicted in Fig.2D,

Fig.2F depicts a cross-sectional view of the embodiment depicted in Fig.2E,

Fig.2G depicts a third embodiment of a steam generator according to the invention,

Fig.2H depicts a fourth embodiment of a steam generator according to the invention,

Fig.2I depicts a fifth embodiment of a steam generator according to the invention,

Fig.2J depicts a sixth embodiment of a steam generator according to the invention,

Fig.3 depicts a seventh embodiment of a steam generator according to the invention,

Fig.4 depicts a handheld steamer implementing a steam generator according to the invention,

Fig.5 depicts a stand steamer implementing a steam generator according to the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0020] Fig.2A depicts a first (exploded) view of a steam generator 200 according to the invention, and Fig.2B depicts a second (assembled) view of a steam generator as depicted in Fig.2A.

[0021] The steam generator 200 comprises a steam chamber 201 for generating steam. The steam chamber 201 extends between a front portion FP and a rear portion RP. The steam generator 200 also comprises at least one steam outlet 202 arranged at the front portion FP and receiving steam from the steam chamber 201.

[0022] The steam generator 200 also comprises a heating element 203 for heating the steam chamber 201.

[0023] The steam generator 200 also comprises a cover 204 adapted to take a closed position for closing the steam chamber 201. This closed position is depicted in Fig.2B.

[0024] The steam generator 200 also comprises a dosing hole 205 arranged in the cover 204, for receiving water and/or steam from outside said steam generator 200. The dosing hole 205 is arranged at proximity of the rear portion RP when the cover 204 is in said closed position, as illustrated in Fig.2B.

[0025] The front portion FP corresponds to the vertical wall arranged at the front part of the steam chamber 201.

[0026] The rear portion RP corresponds to the vertical wall arranged at the rear part of the steam chamber 201.

[0027] Preferably, the proximity of the dosing hole 205 compared to the rear portion RP is such that the dosing hole 205 is arranged within half-length $L1=L/2$ of the

steam chamber length L, starting from the rear portion RP. This is illustrated in the top view Fig.2C.

[0028] Preferably, the dosing hole 205 is arranged along a longitudinal symmetrical axis (AA) of the steam chamber 201. Indeed, given that the garment care product implementing the steam generator 200 according to the invention has usually a limited height and a relatively curved shape, there are more space for arranging the dosing hole 205 along the longitudinal symmetrical axis (AA).

[0029] The steam chamber 201 extends along the longitudinal symmetrical axis (AA) between the rear portion RP and the front portion FP.

[0030] Preferably, the aperture of the dosing hole 205 shall be at least 5 mm in diameter or 20 mm² in area with a minimum dimension of at least 3 mm, as stipulated in paragraph 22 of IEC IEC60335-2-85 standard.

[0031] The steam chamber 201 further comprises a steam channel 206 extending between the dosing hole 205 and the at least one steam outlet 202.

[0032] The steam channel 206 comprises at least two walls arranged substantially perpendicular to the longitudinal symmetrical axis (AA). This embodiment will be further described along with FIG.2C.

[0033] Term "substantially perpendicular" refers to an angle in the range 80-100 degrees. In other words, said at least two walls are substantially parallel compared to each other.

[0034] Preferably, each of two given consecutive walls taken among said at least two walls are arranged to define a steam passage on an opposite side compared to the other wall.

[0035] Preferably, the steam chamber 201 further comprises a first additional wall arranged between said at least one steam outlet 202 and the wall taken among said at least two walls being the closest to the front portion FP: In a first implementation, the first additional wall comprises a single steam passage in its middle part. This single steam passage improves the steam distribution towards the at least one steam outlets 202. This embodiment will be further described along with FIG.2D.

[0036] In a second implementation, in addition to a steam passage in its middle part, the first additional wall also comprises steam passages on the left and on the right of said steam passage being in the middle part. Those steam passages on the left and on the right allow a smooth steam flow, so that any carried scale in the steam flow will be easily flushed out. This embodiment will be further described along with FIG.2E.

[0037] Preferably, the steam chamber 201 further comprises a second additional wall arranged in front the steam passage of said first additional wall. The second additional wall comprises two steam passages on its lateral sides. This second additional wall acts as a front barrier which is used to divert the steam flow to the sides. This contributes reducing the risk of water spitting. This embodiment will be further described along with FIG.2G.

[0038] The dosing hole 205 is preferably arranged in

the cover 204 between the rear portion RP and the wall taken among said at least two walls which is the closest to the rear portion RP.

[0039] In case the dosing hole 205 is arranged further away from the rear portion RP, the at least two walls are also arranged further away in direction of the front portion FP.

[0040] Preferably, a gasket G2 is arranged between the steam chamber 201 and the cover 204. For example, the gasket G2 extends over (part of) the top part of internal walls defining the steam channel 206. The gasket G2 may also extend along the peripheral walls of the steam chamber 201, as illustrated in FIG.2A

[0041] Some specific embodiments of the steam generator 200 introduced above will now be provided in the following.

[0042] Fig.2C depicts a first embodiment of a steam generator according to the invention.

[0043] In this embodiment, the number of the at least two walls is two:

a first wall W1 is arranged near the dosing hole 205 (which is illustrated by a circle in dotted line style), a second wall W4 is arranged adjacent to the first wall W1 in direction of the front portion FP.

[0044] The first wall W1 is dimensioned such that it does not extend completely to the right side of the steam chamber 201, so that a first steam passage SP1 is formed between the right extremity of the first wall W1 and the right lateral wall of the steam chamber 201.

[0045] The second wall W4 is dimensioned such that it does not extend completely to the left side of the steam chamber 201, so that a second steam passage SP4 is formed between the left extremity of the second wall W4 and the left lateral wall of the steam chamber 201.

[0046] The first wall W1 and the second wall W4 define a single S-shape for the steam channel 206.

[0047] The single S-shape for the steam channel 206 increases the length of the steam channel, so this overall improves the evaporation efficiency of the steam generator.

[0048] The steam flow is illustrated by dotted lines starting from the dosing hole 205. The steam follows a single S-shape up to reaching and exiting the at least one steam outlets 202. For example, as illustrated, the number of steam outlets is seven.

[0049] Fig.2D depicts a second embodiment of a steam generator according to the invention.

[0050] This embodiment is based on the embodiment of Fig.2C.

[0051] In addition, the steam channel 206 further comprises a first additional wall W5 arranged between the at least one steam outlet 202, and the wall which is the closest to the front portion FP, corresponding to the second wall W4 in that example. The first additional wall W5 is arranged to define a single steam passage SP5 in its middle part.

[0052] Preferably, the first additional wall W5 is substantially parallel to the first wall W1 and to second wall W4.

[0053] By arranging a single steam passage SP5 in the middle part of the first additional wall W5, steam cannot exit on the lateral extremities of the first additional wall W5 and is thus forced to pass through this central steam passage. In other words, this arrangement creates a "dead" zone on the right side between the second wall W4 and the first additional wall W5, which helps to trap water droplets that would not have fully evaporated into steam yet.

[0054] Preferably, the steam passage SP5 extends completely to the bottom part of the steam chamber 201.

[0055] Preferably, the steam passage SP5 has a width of at least 3mm.

[0056] Fig.2E depicts a variant of the embodiment depicted in Fig.2D.

[0057] In addition to the steam passage SP5 being in the middle part of the first additional wall W5, the first additional wall W5 also comprises:

- a steam passage SP5L on the left of said steam passage SP5,
- a steam passage SP5R on the right of said steam passage SP5.

[0058] Preferably, the steam passages SP5L and SP5R have a width of at least 3mm.

[0059] Preferably, the steam passage SP5L and the steam passage SP5R do not extend completely to the bottom part of the steam chamber 201. Instead, the steam passage SP5L and the steam passage SP5R define a step having a certain height H1 having a value smaller than an inside height H2 of the steam chamber 201, as illustrated in the cross-sectional view BB of Fig.2F.

[0060] For example, H1=5.5mm and H2=12mm.

[0061] The advantage of those steps defined by SP5L and SP5R is to avoid water spitting.

[0062] Preferably, the central steam passage SP5 can also have similar step.

[0063] Fig.2G depicts a third embodiment of a steam generator according to the invention.

[0064] This embodiment is based on the embodiment of Fig.2D.

[0065] In addition, the steam channel 206 further comprises a second additional wall W6 arranged in front the single steam passage of the first additional wall W5. The second additional wall W6 is arranged to define two steam passages (SP61, SP62) on its lateral sides.

[0066] A first steam passage SP61 is formed between the left extremity of the second additional wall W6 and the left lateral wall of the steam chamber 201.

[0067] A second steam passage SP62 is formed between the right extremity of the second additional wall W6 and the right lateral wall of the steam chamber 201.

[0068] Preferably, the second additional wall W6 is

substantially parallel to the first additional wall W5.

[0069] Fig.2H depicts a fourth embodiment of a steam generator according to the invention.

[0070] This embodiment is based on the embodiment of Fig.2C.

[0071] In this embodiment, the number of the at least two walls is four. To this end, compared to the first embodiment of Fig.2C, the steam channel 206 further comprises a third wall W2 and a fourth wall W3 which are both arranged between the first wall W1 and the second wall W4.

[0072] Increasing the number of the walls to four allows increasing the length of the steam channel and the time water droplets will have to evaporate. As a result, the steam generator will have an increased steaming performance by being able to evaporate more efficiently water.

[0073] The third wall W2 is dimensioned such that it does not extend completely to the left side of the steam chamber 201, so that a third steam passage SP2 is formed between the left extremity of the third wall W2 and the left lateral wall of the steam chamber 201. The fourth wall W3 is dimensioned such that it does not extend completely to the right side of the steam chamber 201, so that a fourth steam passage SP3 is formed between the right extremity of the fourth wall W3 and the right lateral wall of the steam chamber 201.

[0074] The first wall W1 and the third wall W2 define a single S-shape portion for the steam channel 206, and the fourth wall W3 and the second wall W4 define a single S-shape portion for the steam channel 206. In other words, the four walls (W1, W2, W3, W4) define a double S-shape for the steam channel 206.

[0075] The double S-shape for the steam channel 206 further increases the length of the steam channel, so this overall improves the evaporation efficiency of the steam generator.

[0076] Preferably, each of the steam passage SP1, SP2, SP3 or SP4 defines a surface in the range [20;200] mm².

[0077] Fig.2I depicts a fifth embodiment of a steam generator according to the invention.

[0078] This embodiment is based on the embodiment of Fig.2H.

[0079] In addition, the first additional wall W5 has been arranged similarly as in Fig.2D.

[0080] Fig.2J depicts a sixth embodiment of a steam generator according to the invention,

[0081] This embodiment is based on the embodiment of Fig.2I.

[0082] In addition, the second additional wall W6 has been arranged similarly as in Fig.2G.

[0083] Fig.3 depicts a seventh embodiment of a steam generator according to the invention

[0084] For sake of convenience, this embodiment is described based on the embodiment of Fig.2J, but similar description could be applied to other embodiments described above.

[0085] The heating element 203 is a tubular heating

element extending over the bottom surface of the steam chamber 201 by defining a nested double-loop shape.

[0086] For example, the heating element 203 comprises a resistor to which an electrical source is supplied.

[0087] Compared to a more traditional and known tubular heating element having a U-shape (not shown), the tubular heating element with nested double-loop shape according to the invention (illustrated by transparency in dotted curved line) allows a more uniform temperature distribution to the steam chamber 201.

[0088] In other words, a larger surface of the steam chamber 201 can be heated up evenly.

[0089] Preferably, the nested double-loop shape for the heating element 203 is arranged underneath the steam chamber 201 surface and extends over at least 30% of the surface area of steam chamber 201 (calculated as the ratio between the projected area of the heating element to the projected area of the steam chamber surface).

[0090] This nested double-loop shape for the heating element 203 allows a relatively larger surface covered by the heating element.

[0091] Preferably, the linear length of the nested double-loop shape for the heating element 203 is in the range [250; 330] mm, compared to known tubular heating element having a U-shape having a linear length in the range [130; 230] mm.

[0092] Moreover, considering the limited space requirement in handheld steamer, this nested double-loop shape for the heating element 203 also helps to elongate the length of the heating element 203, which helps to lower down the heater tube power density, thus improve the reliability and extend the life time.

[0093] Preferably, in the above embodiments:

the steam chamber 201 is for example in aluminium casted, and/or

the sealing gasket G2 has a cross-section chosen among the set of shapes defined by rectangular shape and U shape, and/or

the sealing gasket G2 has a thickness in the range [2.0; 3.0] mm, preferably 2.5 mm, and/or

the sealing gasket G2 is made of silicon rubber material, or equivalent.

[0094] Fig.4 depicts a handheld steamer 401 implementing a steam generator 200 according to the invention.

[0095] The steam generator 200 is encased in the body of the handheld steamer 401. The handheld steamer 401 comprises a soleplate 402 placed at a front end of the handheld steamer. The steam outlet(s) 202 pass through the soleplate 402 in order to spray steam over a garment 403. In the illustration of Fig.4, the handheld steamer 401 is used to iron a garment 403 being in vertical position. However, the handheld steamer 401 could also be used to iron a garment 403 being in horizontal or inclined position.

[0096] The handheld steamer 401 comprises a water tank 404 connected to a water pump 405 via a first pipe 406. The water pump 405 is connected via a second pipe 407 to the dosing hole 205 of the steam generator 200.

[0097] When the water pump 405 is activated, water is dosed in the steam generator 200 via the dosing hole 205, resulting in steam being spread over the garment 403.

[0098] Preferably, the soleplate 402 is made of a metallic material and is connected to the steam generator 200, so that the heat of the steam generator 200 is transferred by conduction to the soleplate 402 in order to improve the treatment of garment 403.

[0099] Preferably, the handheld steamer 401 is power supplied by electrical cable 408.

[0100] Fig.5 depicts a stand steamer 501 implementing a steam generator 200 according to the invention.

[0101] The stand steamer 501 comprises a stand 502 in which are arranged a water supply 503 for supplying water to a steam chamber 504, for example via an electrical water pump 505. The steam chamber 504 is heated by heating element 506. Steam generated by the steam chamber 504 is carried via a hose cord 507 to a steamer head 508. The steamer head 508 is represented bigger than in reality, for sake of clarity. The stand 502 may also comprise a pole 509 for resting the steamer head 508.

[0102] The steamer head 508 comprises a steam chamber 200 according to the invention. Steam received from the hose cord 507 enters the steam chamber 200 by the dosing hole 205, and is re-heated inside the steam chamber 200. Remaining water droplets that would be in this incoming flow of steam are thus evaporated in the steam chamber 200. The re-heated steam then exits the steam chamber 200 at the steam outlets 202 opening in a soleplate 513 arranged at a front end of the steamer head 508. Steam is applied on the textile (i.e. garment) 512 via steam outlet(s) 202. The soleplate 513 can be heated by the heating element 203. The stand steamer 501 has the advantage that steam exiting the steam vents 11 does not contain water droplets.

[0103] A control unit 510 allows controlling the pumping rate of pump 505, the electrical power supplied to the heating elements 506 and 203.

[0104] 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 or equally displaced without departing from the scope of the technique approaches of the present invention, which will also fall into 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. A steam generator (200) for garment care comprising:

- a steam chamber (201) for generating steam, said steam chamber (201) extending between a front portion (FP) and a rear portion (RP),
 - at least one steam outlet (202) arranged at said front portion (FP) and receiving steam from said steam chamber (201),
 - a heating element (203) for heating the steam chamber (201),
 - a cover (204) adapted to take a closed position for closing said steam chamber (201),
 - a dosing hole (205) arranged in said cover (204), for receiving water and/or steam from outside said steam generator (200), and

arranged at proximity of said rear portion (RP) when said cover (204) is in said closed position, and **characterised in that** said heating element (203) is a tubular heating element extending over the surface of the steam chamber (201) by defining a nested double-loop shape.

2. A steam generator as claimed in claim 1, wherein said steam chamber (201) further comprises a steam channel (206) extending between said dosing hole (205) and said at least one steam outlet (202), said steam channel (206) comprising at least two walls (W1, W2, W3, W4) arranged substantially perpendicular to a longitudinal symmetrical axis (AA) of said steam chamber (201), between said rear portion (RP) and said front portion (FP).

3. A steam generator as claimed in claim 2, wherein the number of said at least two walls is two.

4. A steam generator as claimed in claim 2, wherein the number of said at least two walls is four.

5. A steam generator as claimed in any one of claims 2 to 4, wherein each of two given consecutive walls taken among said at least two walls are arranged to define a steam passage on an opposite side compared to the other wall.

6. A steam generator as claimed in any one of claims 2 to 5, wherein said steam chamber (201) further comprises a first additional wall (W5) arranged between said at least one steam outlet (202) and the wall taken among said at least two walls (W1, W2, W3, W4) being the closest to the front portion FP, said first additional wall (W5) being arranged to define a central steam passage (SP5) in its middle part.

7. A steam generator as claimed in claim 6, wherein

said first additional wall (W5) further comprises a steam passage (SP5L) on the left of said central steam passage (SP5), and a steam passage (SP5R) on the right of said central steam passage (SP5).

8. A steam generator as claimed in claim 7, wherein said steam passage (SP5L) on the left of said central steam passage (SP5) and said steam passage (SP5R) on the right of said central steam passage (SP5) each define a step having a certain height (H1) having a value smaller than an inside height (H2) of the steam chamber (201).

9. A steam generator as claimed in any one of claims 6 to 8, wherein said steam chamber (201) further comprises a second additional wall (W6) arranged in front said first additional wall (W5), said second additional wall (W6) being arranged to define two steam passages (SP61, SP62) on its lateral sides.

10. A steam generator as claimed in any one of the claims 2 to 9, wherein said dosing hole (205) is arranged in said cover (204) at a position being between said rear portion (RP) and the wall taken among said at least two walls (W1, W2, W3, W4) which is the closest to the rear portion (RP).

11. A steam generator as claimed in any one of claims 1 to 10, wherein said heating element (203) is arranged underneath the steam chamber (201) surface and extends over at least 30% of the surface area of said steam chamber (201).

12. A handheld steamer (401) comprising a steam generator (200) as claimed in any one of the preceding claims.

13. A stand steamer (501) comprising a steam generator (200) as claimed in any one of the preceding claims.

Patentansprüche

1. Dampferzeuger (200) zur Wäschepflege, umfassend:

- eine Dampfkammer (201) zum Erzeugen von Dampf, wobei sich die Dampfkammer (201) zwischen einem vorderen Abschnitt (FP) und einem hinteren Abschnitt (RP) erstreckt,
 - mindestens einen Dampfauslass (202), der am vorderen Abschnitt (FP) angeordnet ist und Dampf aus der Dampfkammer (201) empfängt,
 - ein Heizelement (203) zum Erhitzen der Dampfkammer (201),
 - eine Abdeckung (204), die angepasst ist, um eine geschlossene Position zum Schließen der

- Dampfkammer (201) einzunehmen,
 - ein Dosierloch (205), das in der Abdeckung (204) angeordnet ist, zum Empfangen von Wasser und/oder Dampf von außerhalb des Dampferzeugers (200), und das, wenn sich die Abdeckung (204) in der geschlossenen Position befindet, in der Nähe des hinteren Abschnitts (RP) angeordnet ist, und **dadurch gekennzeichnet, dass** das Heizelement (203) ein röhrenförmiges Heizelement ist, das sich über die Oberfläche der Dampfkammer (201) erstreckt, indem es eine verschachtelte Doppelschleifenform definiert.
2. Dampferzeuger nach Anspruch 1, wobei die Dampfkammer (201) weiter einen Dampfkanal (206) umfasst, der sich zwischen dem Dosierloch (205) und dem mindestens einen Dampfauslass (202) erstreckt, wobei der Dampfkanal (206) mindestens zwei Wände (W1, W2, W3, W4) umfasst, die im Wesentlichen senkrecht zu einer Längssymmetrieachse (AA) der Dampfkammer (201) zwischen dem hinteren Abschnitt (RP) und dem vorderen Abschnitt (FP) angeordnet sind.
 3. Dampferzeuger nach Anspruch 2, wobei die Anzahl der mindestens zwei Wände zwei beträgt.
 4. Dampferzeuger nach Anspruch 2, wobei die Anzahl der mindestens zwei Wände vier beträgt.
 5. Dampferzeuger nach einem der Ansprüche 2 bis 4, wobei jede von zwei gegebenen aufeinanderfolgenden Wänden unter den mindestens zwei Wänden angeordnet sind, um auf einer im Vergleich zur anderen Wand gegenüberliegenden Seite einen Dampfdurchgang zu definieren.
 6. Dampferzeuger nach einem der Ansprüche 2 bis 5, wobei die Dampfkammer (201) weiter eine erste zusätzliche Wand (W5) umfasst, die zwischen dem mindestens einen Dampfauslass (202) und der Wand unter den mindestens zwei Wänden (W1, W2, W3, W4), die dem vorderen Abschnitt FP am nächsten ist, angeordnet ist, wobei die erste zusätzliche Wand (W5) angeordnet ist, um in ihrem mittleren Teil einen zentralen Dampfdurchgang (SP5) zu definieren.
 7. Dampferzeuger nach Anspruch 6, wobei die erste zusätzliche Wand (W5) weiter einen Dampfdurchgang (SPSL) links vom zentralen Dampfdurchgang (SP5), und einen Dampfdurchgang (SPSR) rechts vom zentralen Dampfdurchgang (SP5) umfasst.
 8. Dampferzeuger nach Anspruch 7, wobei der Dampfdurchgang (SPSL) links vom zentralen Dampfdurchgang (SP5) und der Dampfdurchgang (SPSR) rechts vom zentralen Dampfdurchgang (SP5) jeweils eine Stufe definieren, die eine gewisse Höhe (H1) aufweist, die einen kleineren Wert aufweist als eine Innenhöhe (H2) der Dampfkammer (201).
 9. Dampferzeuger nach einem der Ansprüche 6 bis 8, wobei die Dampfkammer (201) weiter eine zweite zusätzliche Wand (W6) umfasst, die vor der ersten zusätzlichen Wand (W5) angeordnet ist, wobei die zweite zusätzliche Wand (W6) angeordnet ist, um an ihren seitlichen Seiten zwei Dampfdurchgänge (SP61, SP62) zu definieren.
 10. Dampferzeuger nach einem der Ansprüche 2 bis 9, wobei das Dosierloch (205) in der Abdeckung (204) in einer Position angeordnet ist, die sich zwischen dem hinteren Abschnitt (RP) und der Wand unter den mindestens zwei Wänden (W1, W2, W3, W4), die dem hinteren Abschnitt (RP) am nächsten ist, befindet.
 11. Dampferzeuger nach einem der Ansprüche 1 bis 10, wobei das Heizelement (203) unterhalb der Oberfläche der Dampfkammer (201) angeordnet ist und sich über mindestens 30% des Oberflächenbereichs der Dampfkammer (201) erstreckt.
 12. Handdampfer (401), der einen Dampferzeuger (200) nach einem der vorstehenden Ansprüche umfasst.
 13. Standdampfer (501), der einen Dampferzeuger (200) nach einem der vorstehenden Ansprüche umfasst.
- ## Revendications
1. Générateur de vapeur (200) pour l'entretien de vêtements comprenant :
 - une chambre à vapeur (201) pour générer de la vapeur, ladite chambre à vapeur (201) s'étendant entre une partie avant (FP) et une partie arrière (RP),
 - au moins une sortie de vapeur (202) agencée au niveau de ladite partie avant (FP) et recevant de la vapeur provenant de ladite chambre à vapeur (201),
 - un élément chauffant (203) pour chauffer la chambre à vapeur (201),
 - un couvercle (204) conçu pour adopter une position fermée pour fermer ladite chambre à vapeur (201),
 - un trou de dosage (205) agencé dans ledit couvercle (204), pour recevoir de l'eau et/ou de la vapeur provenant de l'extérieur dudit générateur de vapeur (200), et agencé à proximité de ladite partie arrière (RP) lorsque ledit cou-

- vercle (204) est dans ladite position fermée, et **caractérisé en ce que** ledit élément chauffant (203) est un élément chauffant tubulaire s'étendant sur la surface de la chambre à vapeur (201) en définissant une forme de double boucle imbriquée.
2. Générateur de vapeur selon la revendication 1, dans lequel ladite chambre à vapeur (201) comprend en outre un canal de vapeur (206) s'étendant entre ledit trou de dosage (205) et ladite au moins une sortie de vapeur (202), ledit canal de vapeur (206) comprenant au moins deux parois (W1, W2, W3, W4) agencées sensiblement perpendiculairement à un axe de symétrie longitudinal (AA) de ladite chambre à vapeur (201), entre ladite partie arrière (RP) et ladite partie avant (FP).
 3. Générateur de vapeur selon la revendication 2, dans lequel le nombre desdites au moins deux parois est de deux.
 4. Générateur de vapeur selon la revendication 2, dans lequel le nombre desdites au moins deux parois est de quatre.
 5. Générateur de vapeur selon l'une quelconque des revendications 2 à 4, dans lequel chacune de deux parois consécutives données prises parmi lesdites au moins deux parois est agencée pour définir un passage de vapeur sur un côté opposé par rapport à l'autre paroi.
 6. Générateur de vapeur selon l'une quelconque des revendications 2 à 5, dans lequel ladite chambre à vapeur (201) comprend en outre une première paroi supplémentaire (W5) agencée entre ladite au moins une sortie de vapeur (202) et la paroi prise parmi lesdites au moins deux parois (W1, W2, W3, W4) étant la plus proche de la partie avant FP, ladite première paroi supplémentaire (W5) étant agencée pour définir un passage de vapeur central (SP5) dans sa partie médiane.
 7. Générateur de vapeur selon la revendication 6, dans lequel ladite première paroi supplémentaire (W5) comprend en outre un passage de vapeur (SP5L) à gauche dudit passage de vapeur central (SP5), et un passage de vapeur (SP5R) à droite dudit passage de vapeur central (SP5).
 8. Générateur de vapeur selon la revendication 7, dans lequel ledit passage de vapeur (SP5L) à gauche dudit passage de vapeur central (SP5) et ledit passage de vapeur (SP5R) à droite dudit passage de vapeur central (SP5) définissent chacun une marche présentant une certaine hauteur (H1) présentant une valeur inférieure à une hauteur intérieure (H2) de la chambre à vapeur (201).
 9. Générateur de vapeur selon l'une quelconque des revendications 6 à 8, dans lequel ladite chambre à vapeur (201) comprend en outre une seconde paroi supplémentaire (W6) agencée devant ladite première paroi supplémentaire (W5), ladite seconde paroi supplémentaire (W6) étant agencée pour définir deux passages de vapeur (SP61, SP62) sur ses côtés latéraux.
 10. Générateur de vapeur selon l'une quelconque des revendications 2 à 9, dans lequel ledit trou de dosage (205) est agencé dans ledit couvercle (204) en une position située entre ladite partie arrière (RP) et la paroi prise parmi lesdites au moins deux parois (W1, W2, W3, W4) qui est la plus proche de la partie arrière (RP).
 11. Générateur de vapeur selon l'une quelconque des revendications 1 à 10, dans lequel ledit élément chauffant (203) est agencé sous la surface de la chambre à vapeur (201) et s'étend sur au moins 30 % de la surface de ladite chambre à vapeur (201).
 12. Défroisseur à main (401) comprenant un générateur de vapeur (200) selon l'une quelconque des revendications précédentes.
 13. Défroisseur sur pied (501) comprenant un générateur de vapeur (200) selon l'une quelconque des revendications précédentes.

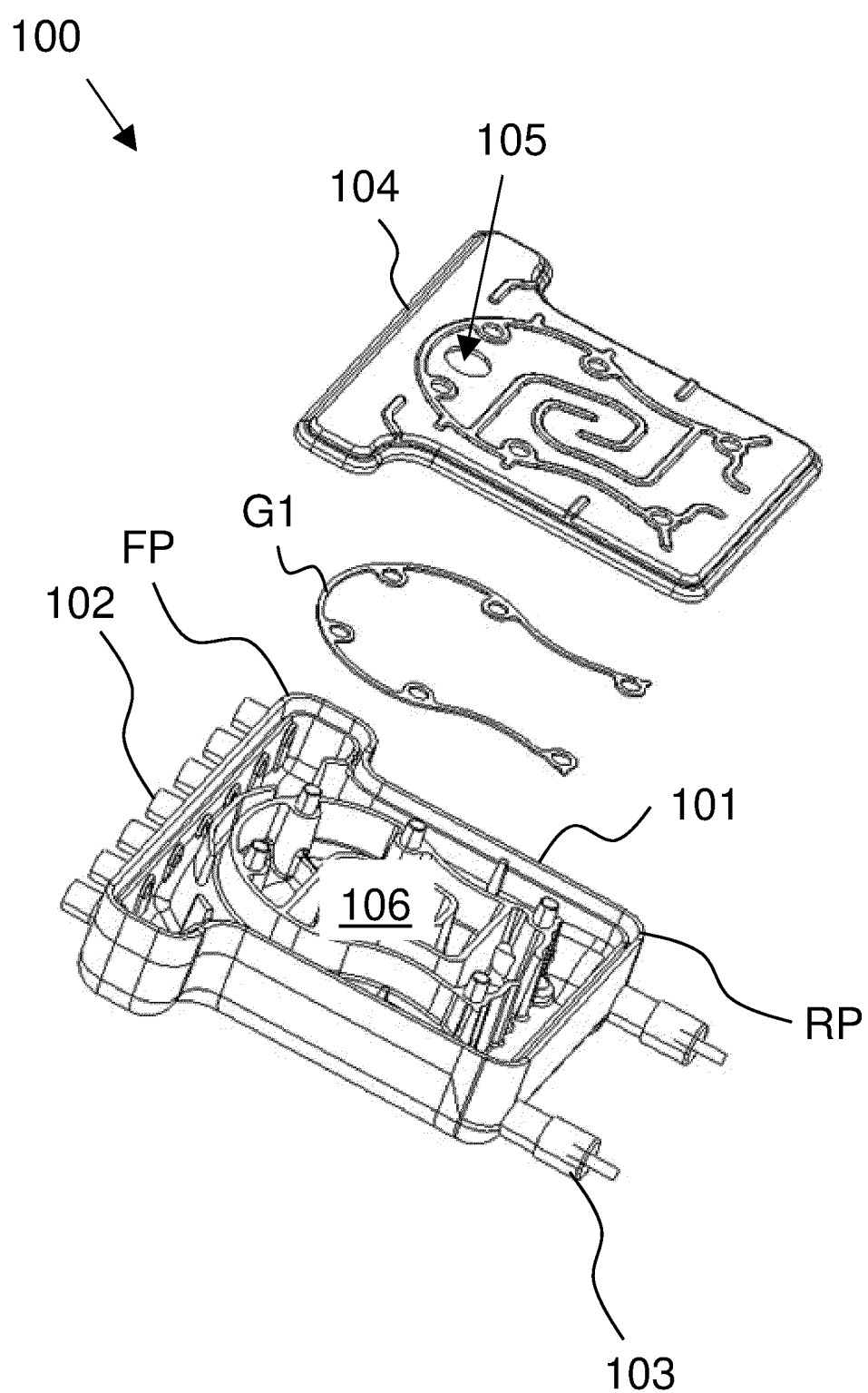


FIG.1A

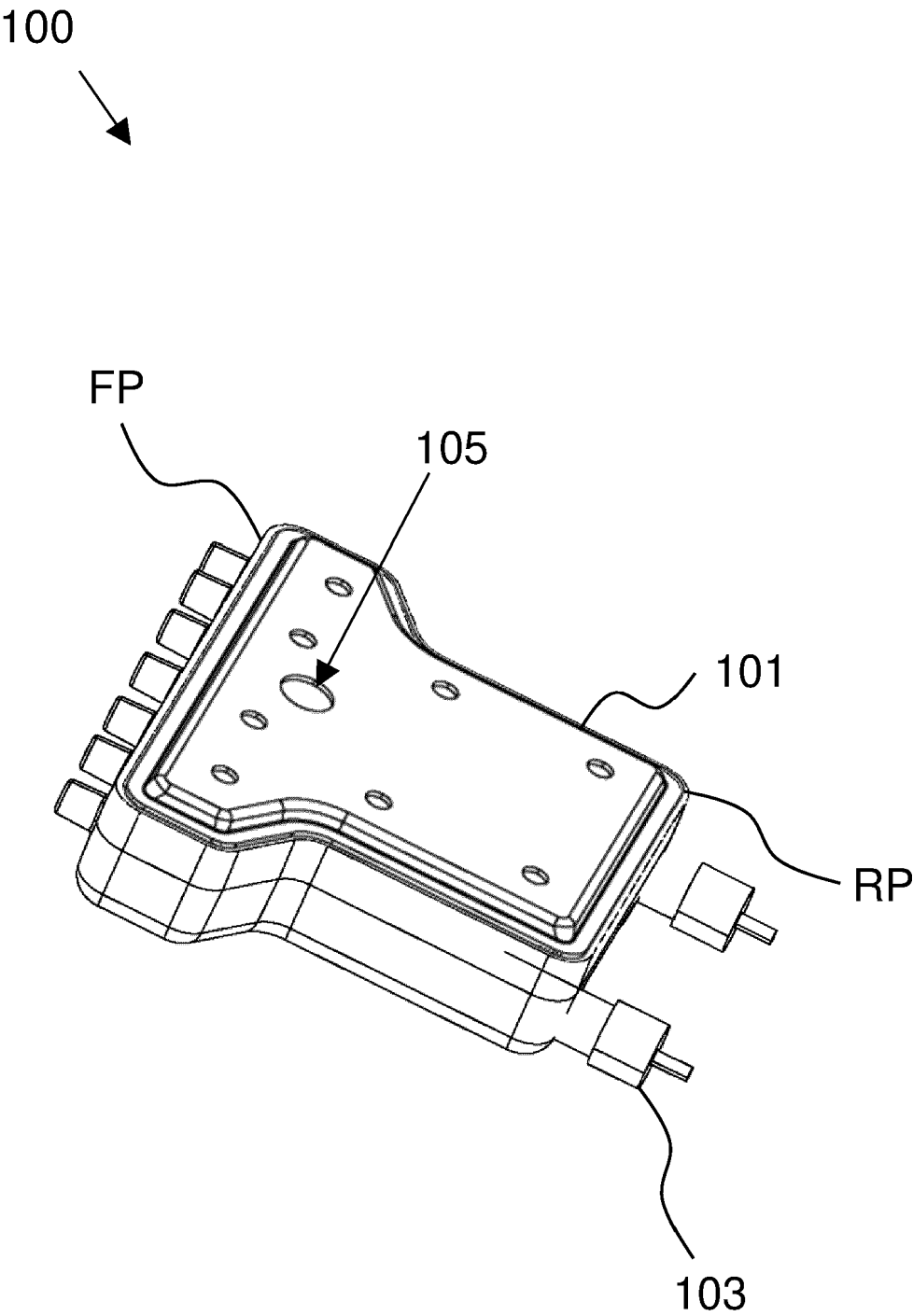


FIG.1B

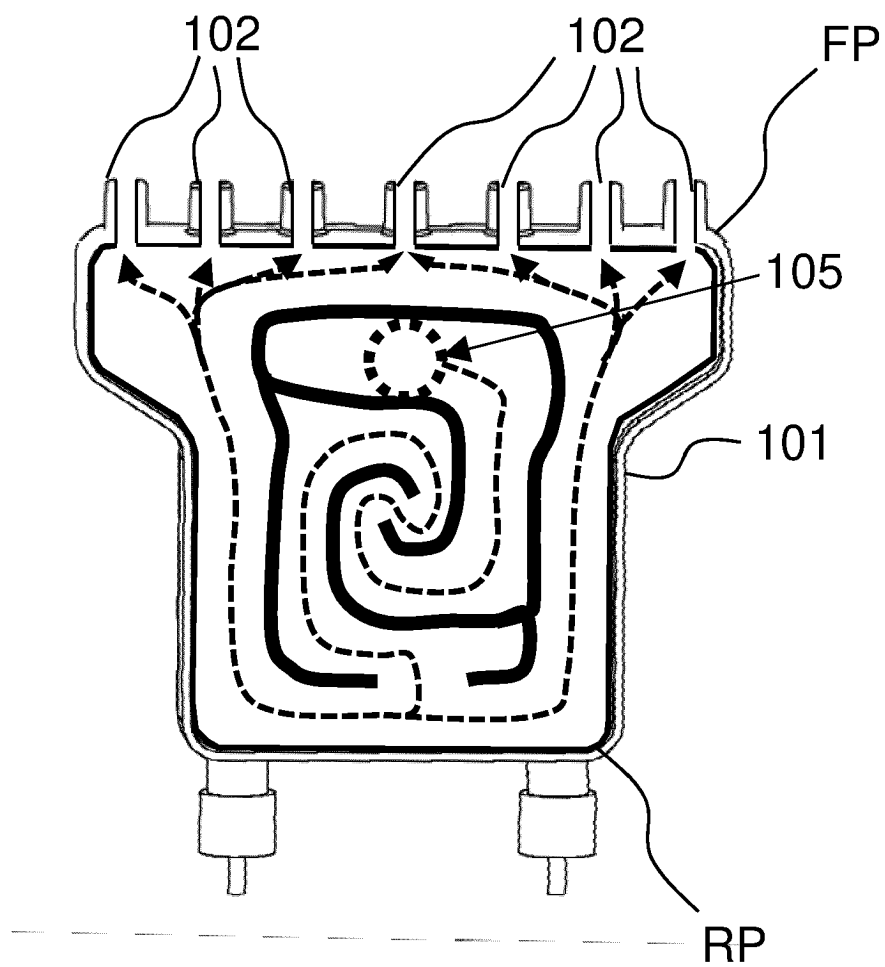


FIG.1C

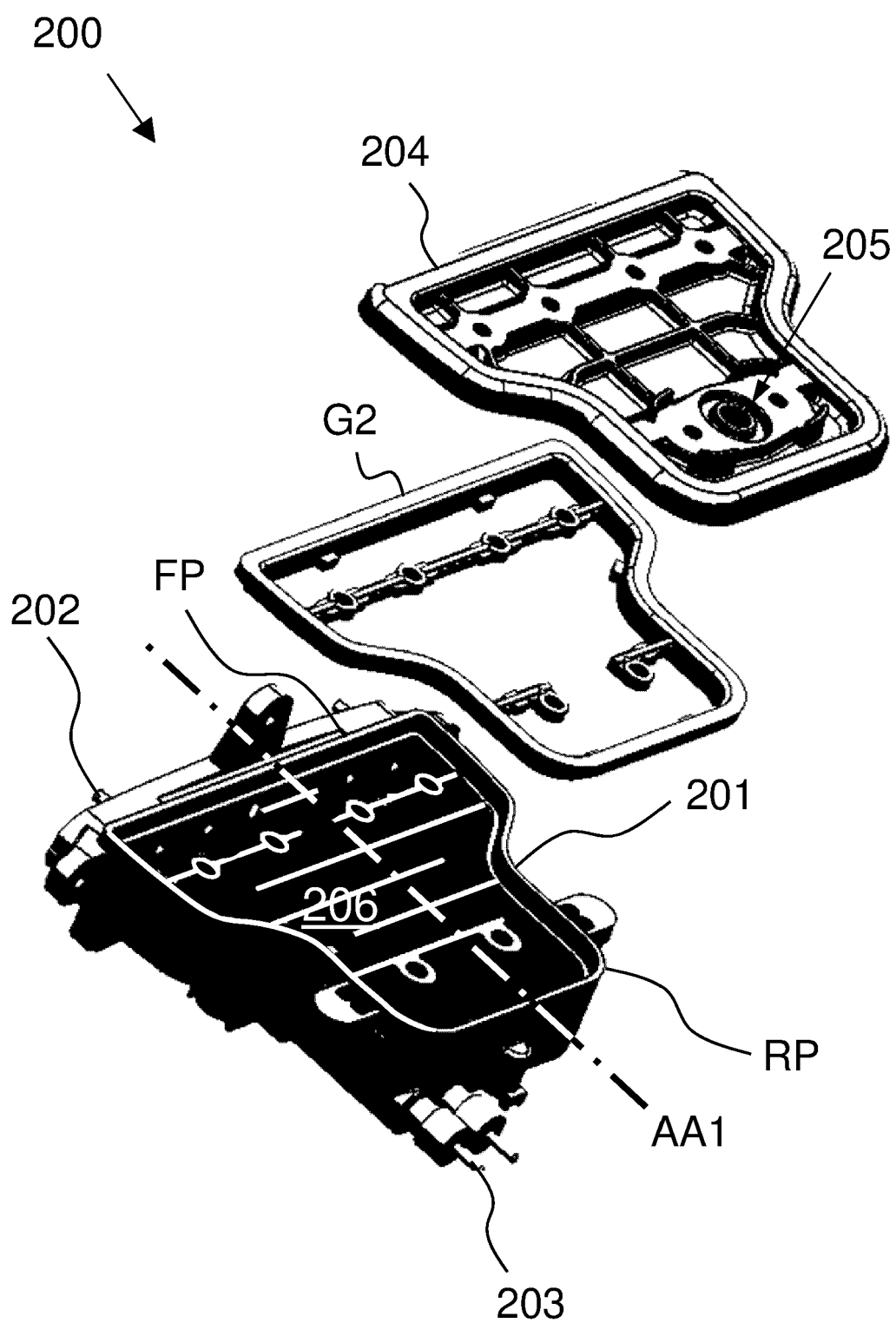


FIG.2A

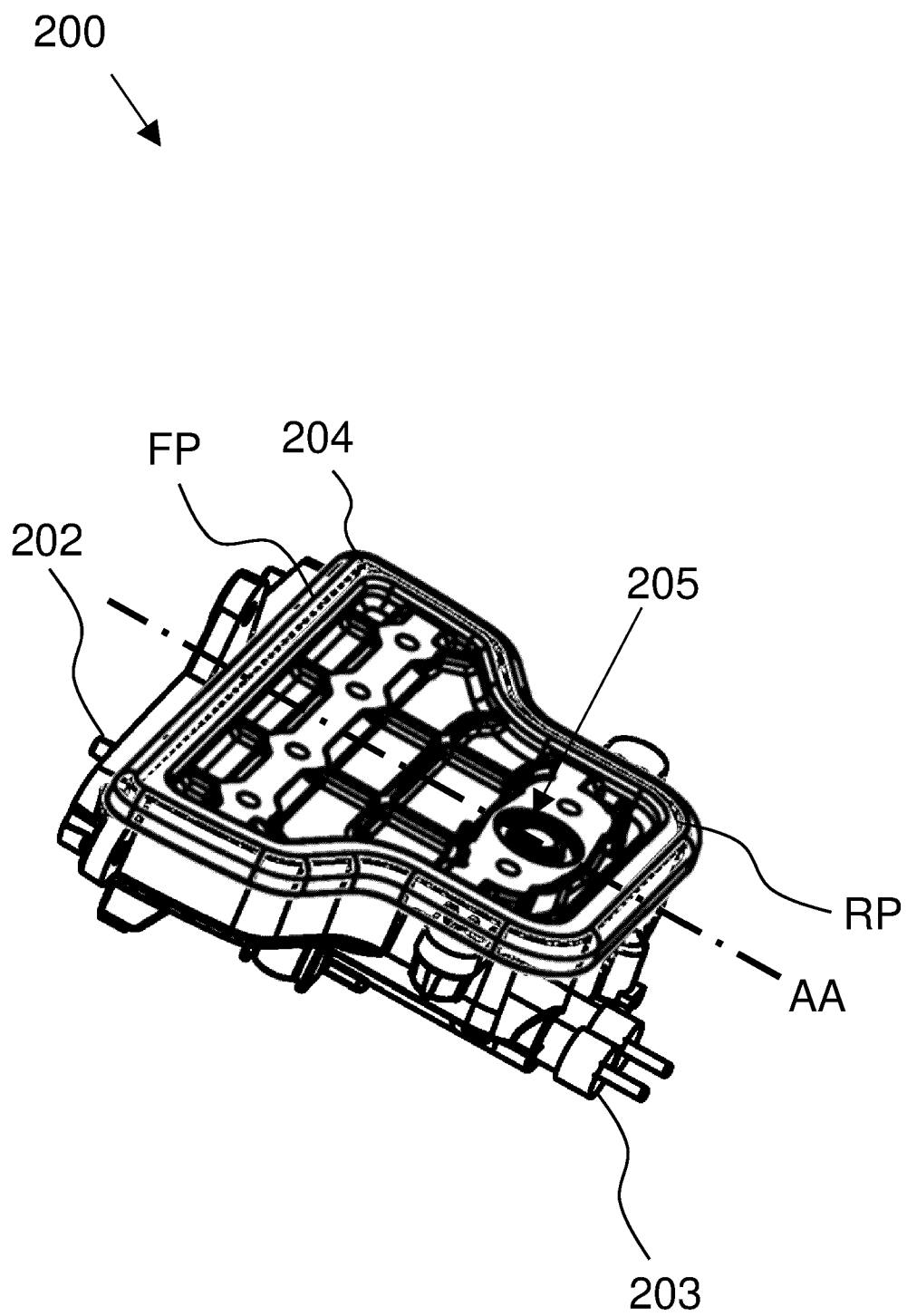


FIG.2B

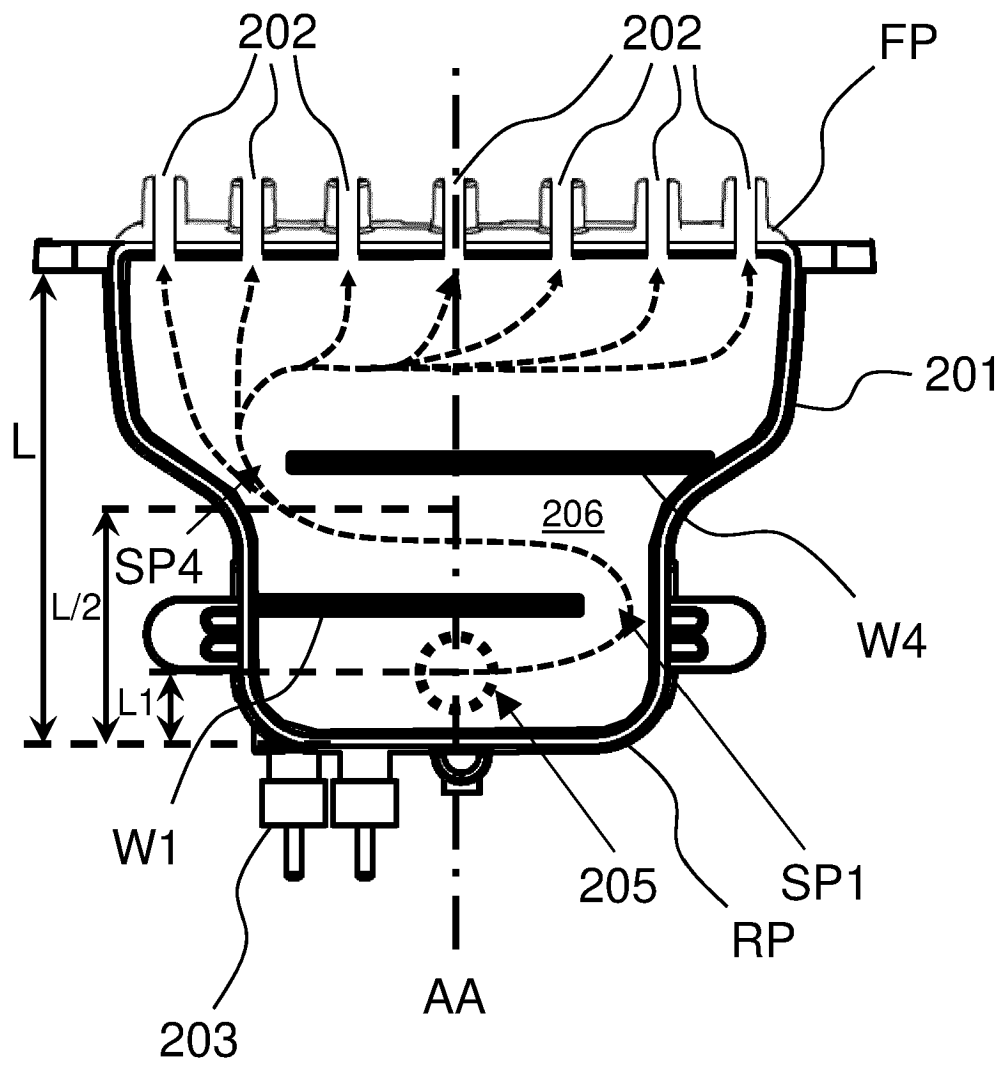


FIG.2C

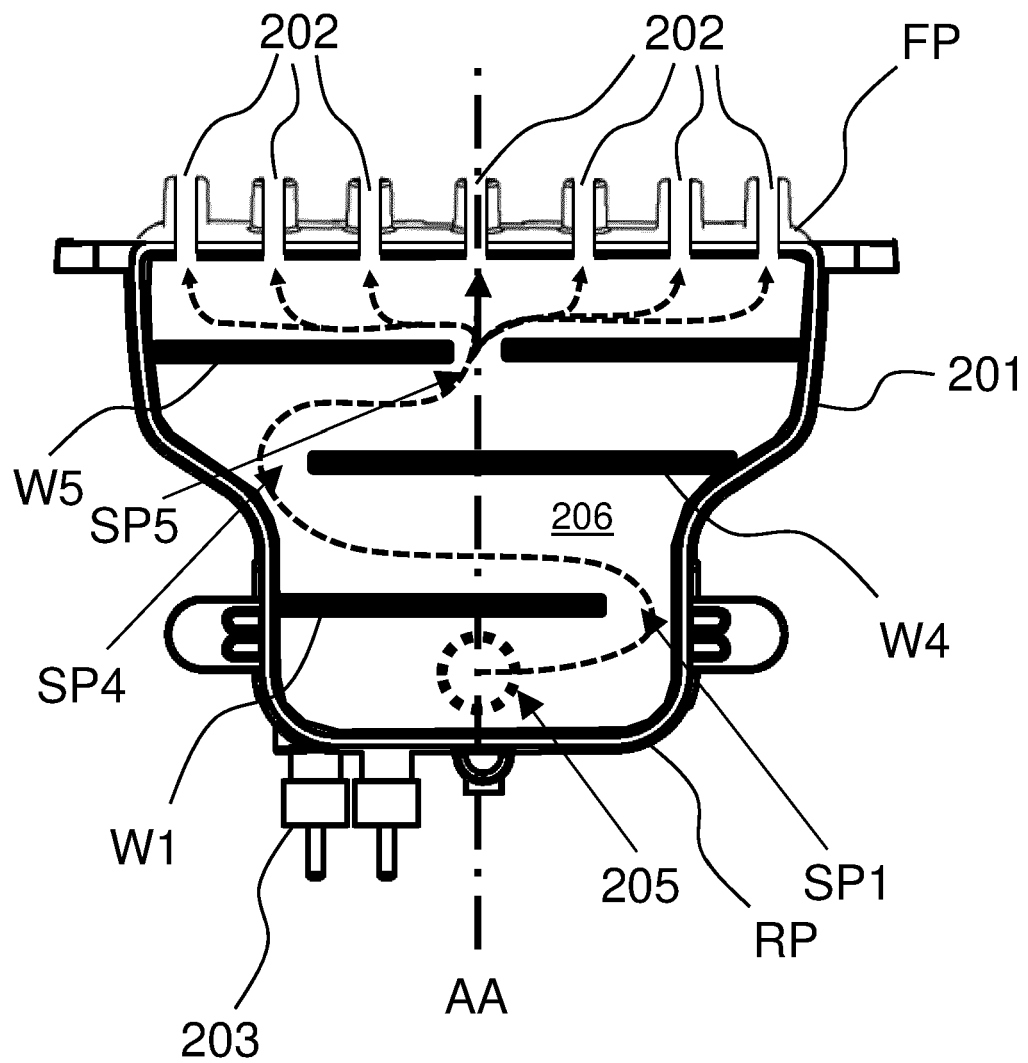


FIG.2D

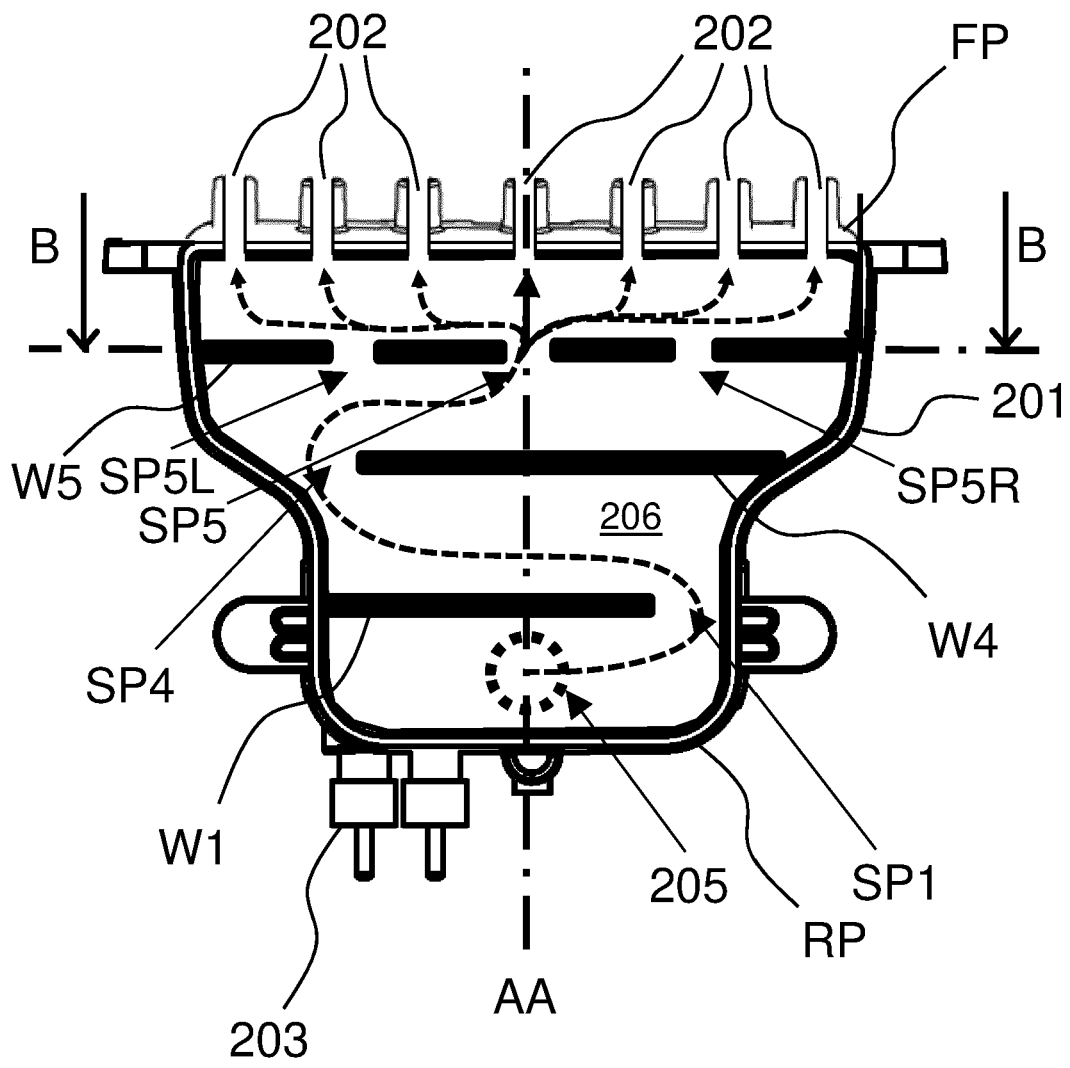


FIG.2E

BB

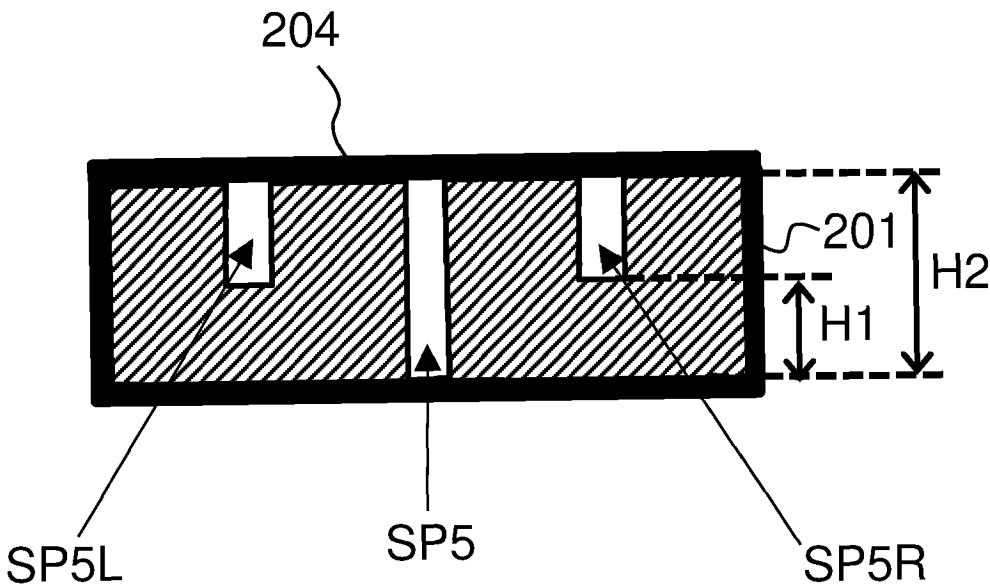


FIG.2F

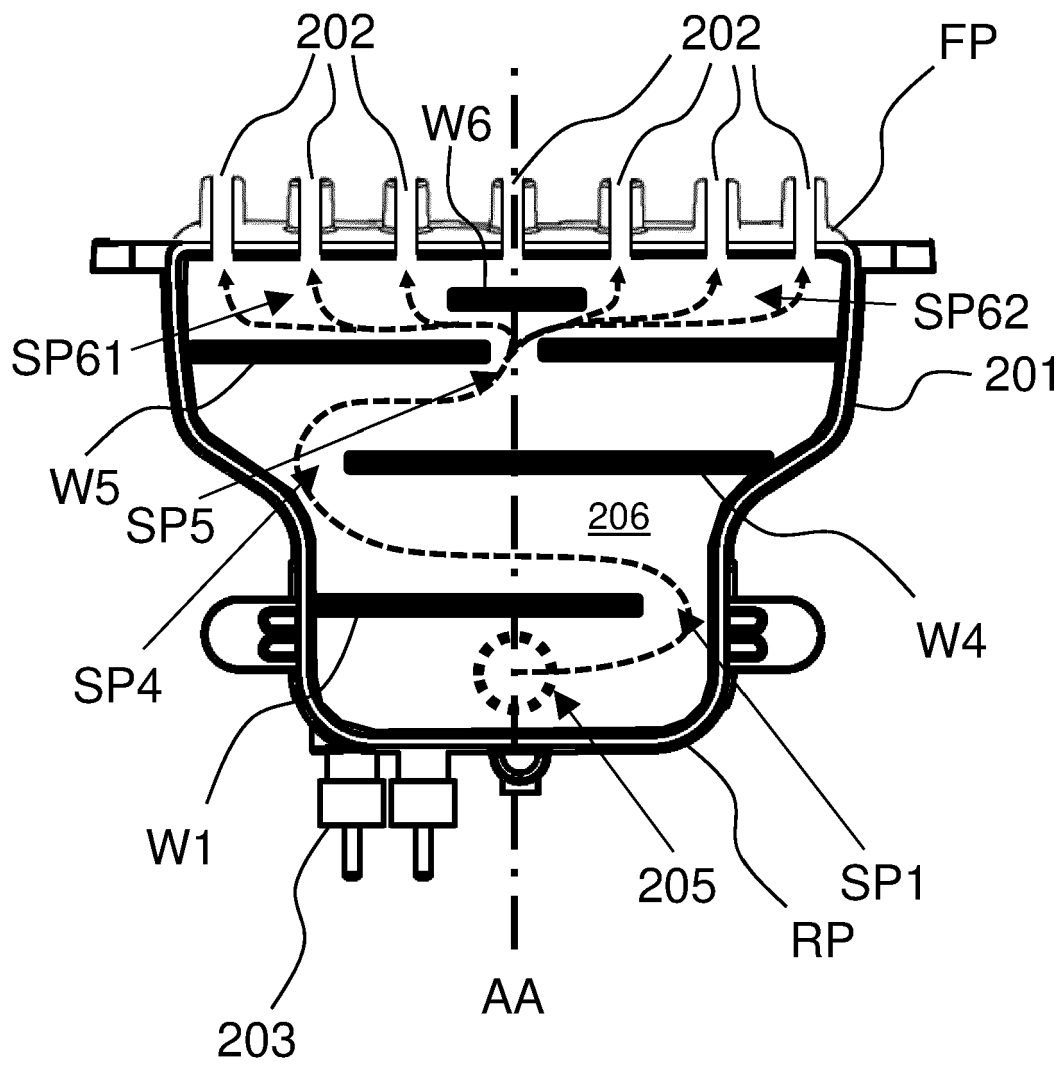


FIG.2G

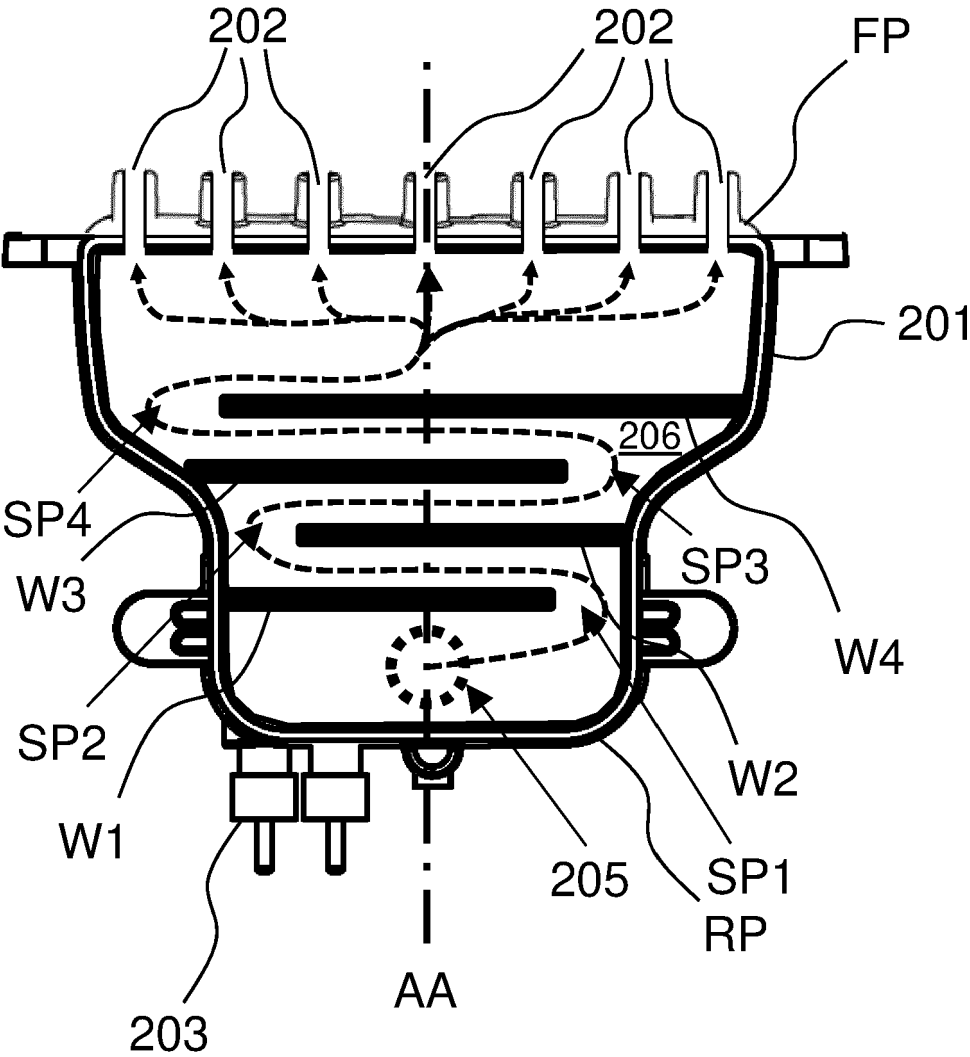


FIG.2H

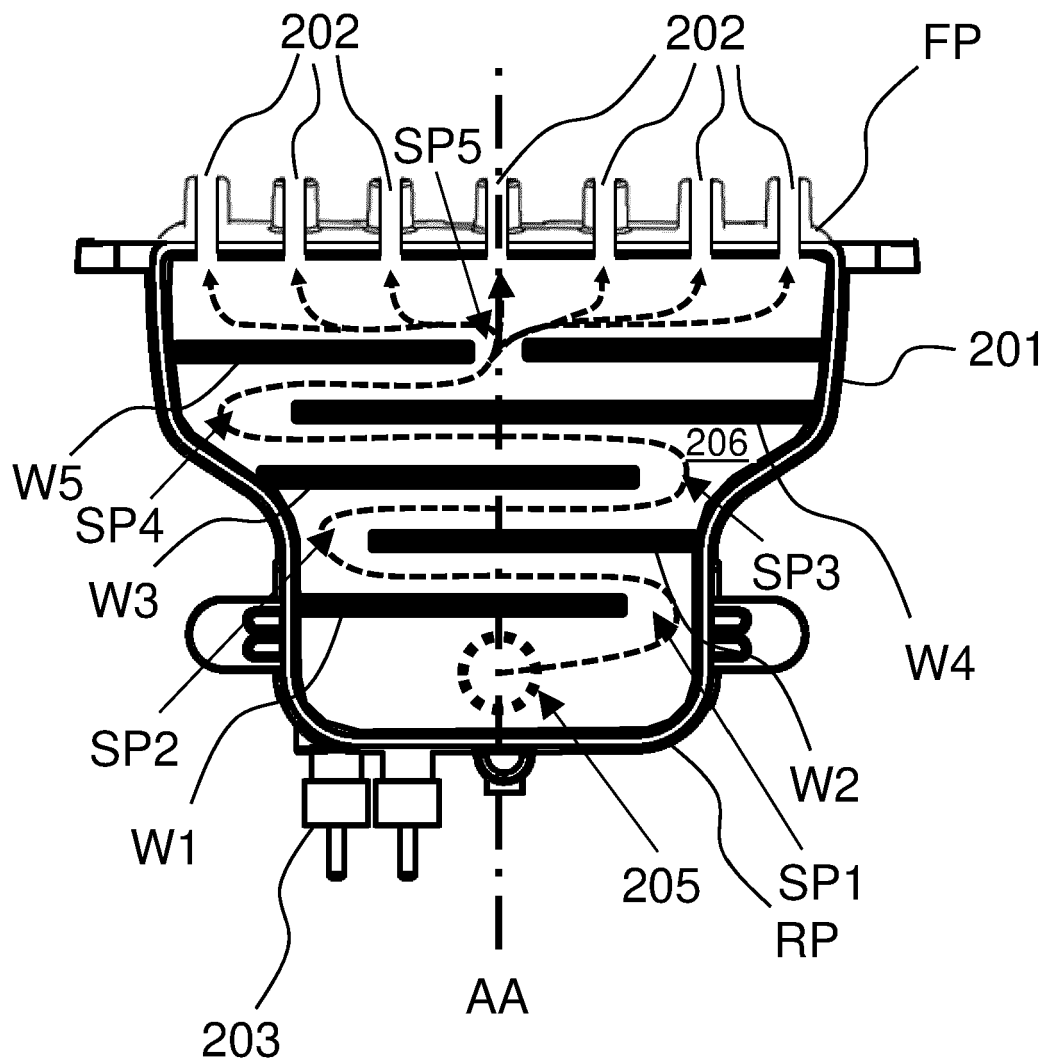


FIG.2I

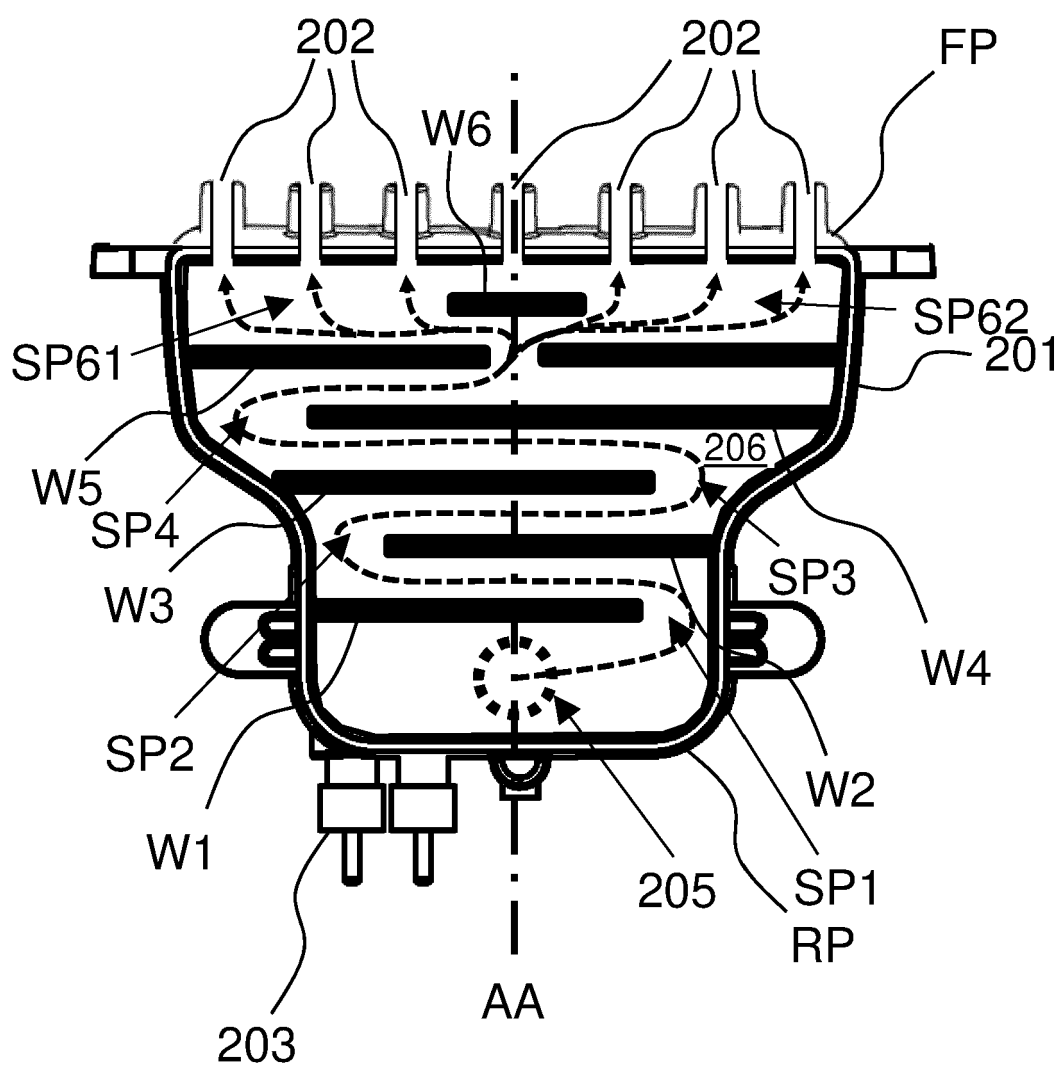


FIG.2J

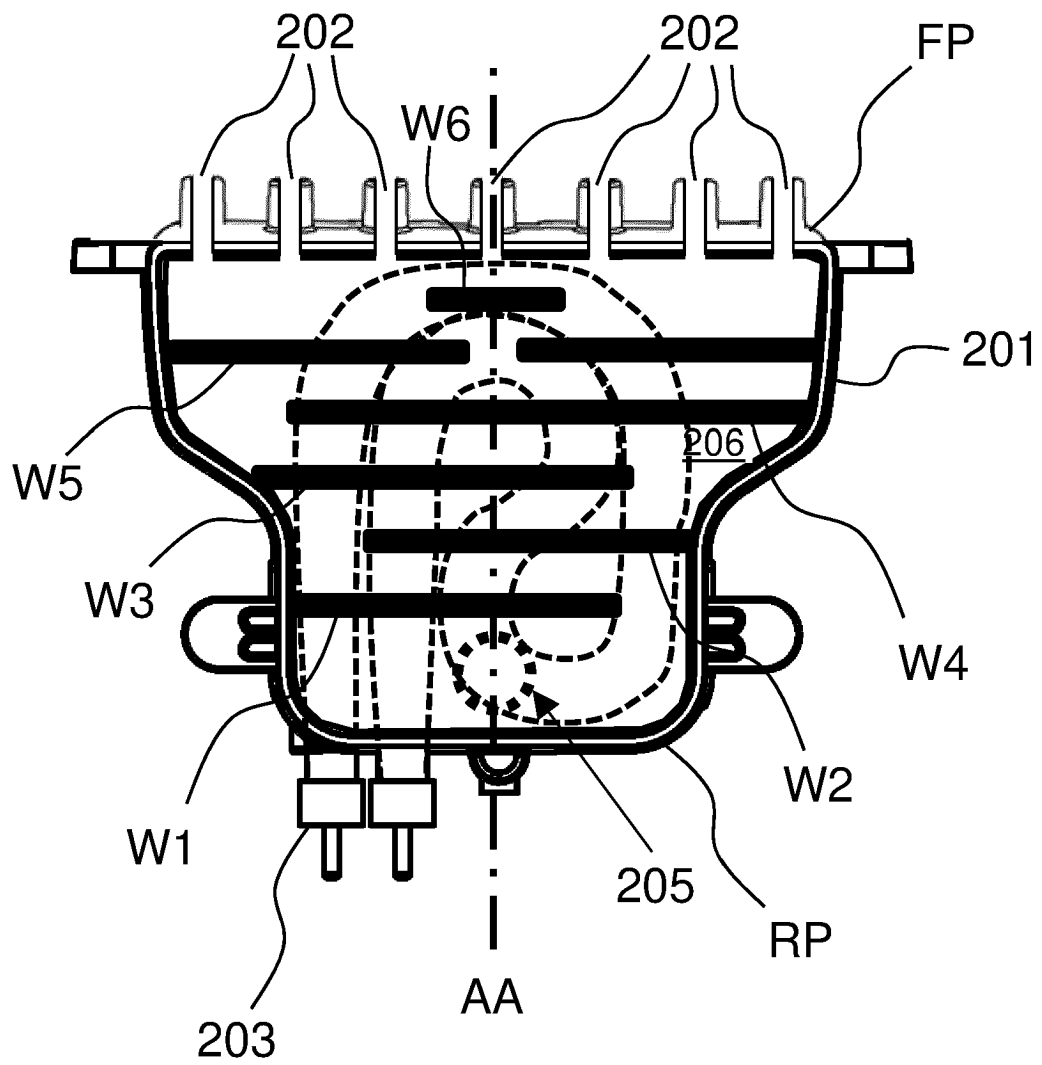


FIG.3

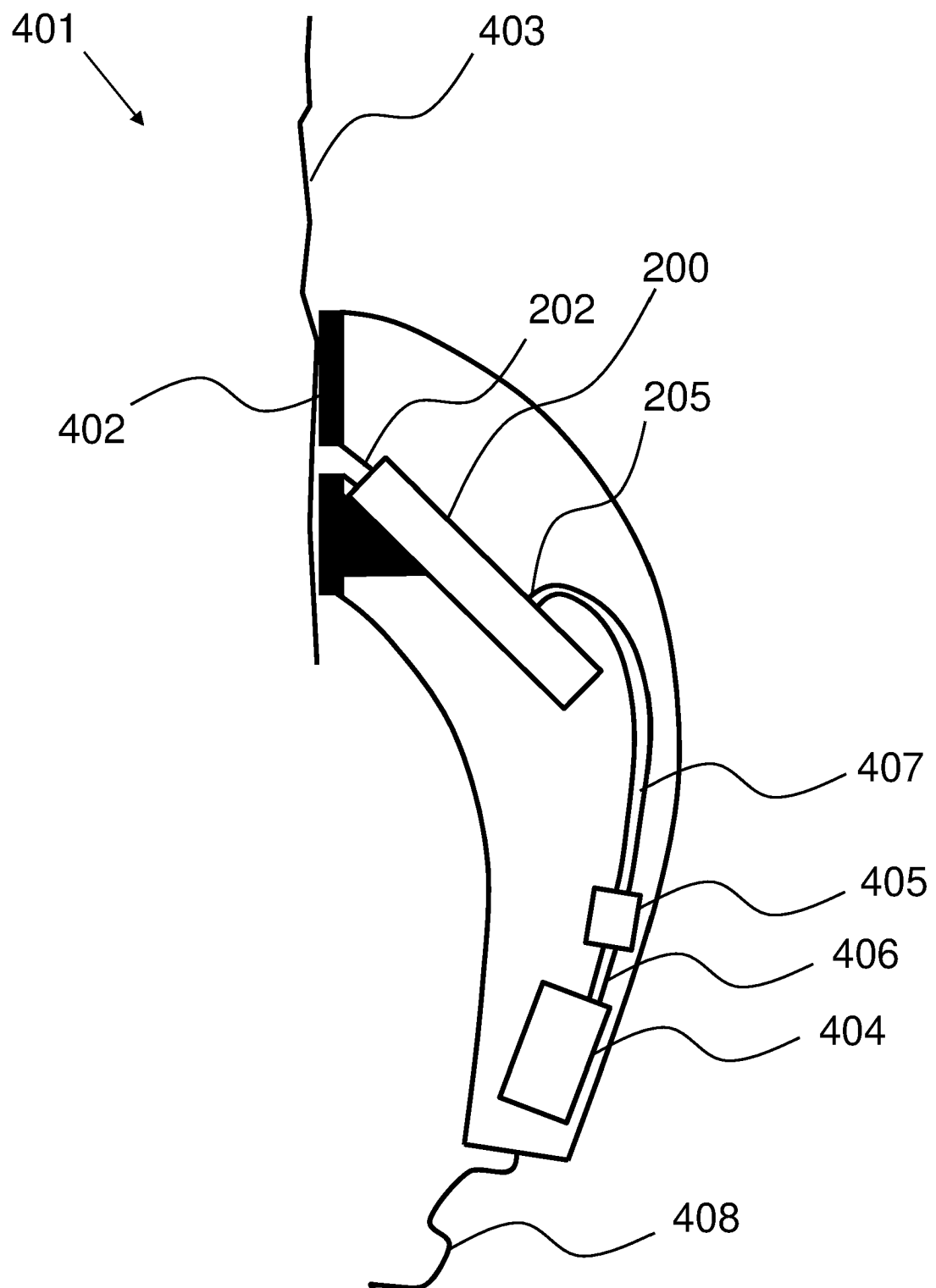


FIG.4

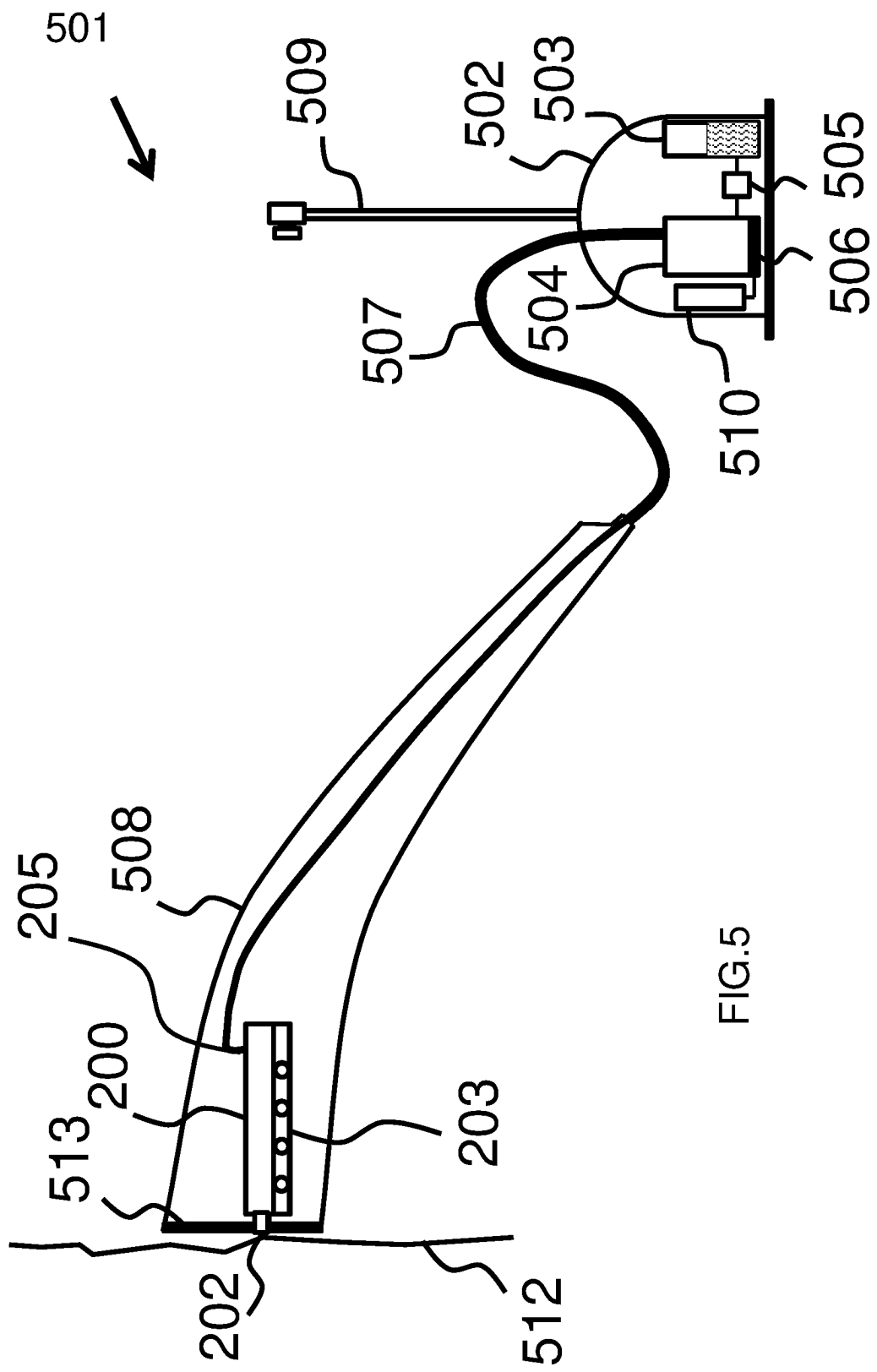


FIG.5

REFERENCES CITED IN THE DESCRIPTION

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