



(11)

EP 4 260 725 A1

(12)

EUROPEAN PATENT APPLICATION
published in accordance with Art. 153(4) EPC

(43) Date of publication:
18.10.2023 Bulletin 2023/42

(51) International Patent Classification (IPC):
A24F 40/40^(2020.01)

(21) Application number: **20965142.1**

(52) Cooperative Patent Classification (CPC):
A24F 40/40

(22) Date of filing: **11.12.2020**

(86) International application number:
PCT/JP2020/046198

(87) International publication number:
WO 2022/123760 (16.06.2022 Gazette 2022/24)

(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
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

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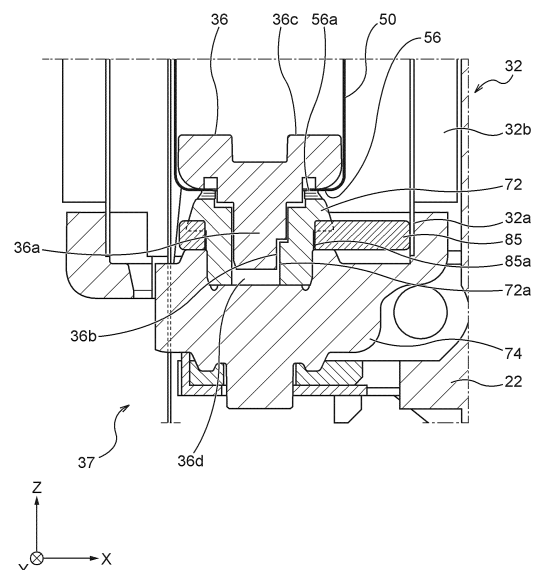
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(54) **FLAVOR INHALER**

(57) To obtain a flavor inhaler including an accommodating portion exhibiting high workability. A flavor inhaler includes an accommodating portion that accommodates at least a part of a flavor generating article, and the accommodating portion includes a tubular portion that surrounds a circumference of the flavor generating article and an abutting portion that is formed of a member different from the tubular portion and abuts the flavor generating article accommodated in the accommodating portion.

Fig. 9



Description

TECHNICAL FIELD

[0001] The present invention relates to a flavor inhaler.

BACKGROUND ART

[0002] Conventionally, flavor inhalers for inhaling flavors or the like without burning materials are known. As such a flavor inhaler, there is a flavor inhaler including an accommodating portion that accommodates a flavor generating article, the accommodating portion including a tubular portion that surrounds the circumference of the flavor generating article and a base portion that projects from a bottom portion of the accommodating portion and abuts an end portion of the flavor generating article, the tubular portion and the base portion being integrally molded by the same member, for example (see PTL 1, for example).

CITATION LIST

PATENT LITERATURE

[0003] PTL 1: International Publication No. WO 2020/074612

SUMMARY OF INVENTION

TECHNICAL PROBLEM

[0004] In the flavor inhaler described in PTL 1, the tubular portion and the base portion are integrally molded by the same member to form the accommodating portion. Therefore, there is a problem that it is difficult to finely work the base portion.

[0005] The present invention was made in order to solve at least a part of the problem as described above, and an object thereof is to obtain a flavor inhaler including an accommodating portion exhibiting high workability and obtained to have a desired fine shape at low cost.

SOLUTION TO PROBLEM

[0006] According to a first aspect of the present invention, a flavor inhaler is provided. The flavor inhaler includes: an accommodating portion that includes an opening formed at one end and accommodates at least a part of a flavor generating article via the opening, the accommodating portion including a tubular portion that surrounds a circumference of the flavor generating article, and an abutting portion that is disposed at the other end of the accommodating portion inside the tubular portion, is formed of a member that is different from the tubular portion, and abuts the flavor generating article accommodated in the accommodating portion.

[0007] According to the first aspect of the present in-

vention, the accommodating portion is configured of the tubular portion and the abutting portion that is formed of a member different from the tubular portion, and it is thus possible to form the accommodating portion by combining the abutting portion that has been finely worked in advance with the tubular portion. Therefore, it is possible to obtain a flavor inhaler including the accommodating portion exhibiting high workability and obtained to have a desired fine shape at low cost.

[0008] In a second aspect of the present invention, the abutting portion is configured of a resin in the first aspect.

[0009] According to the second aspect of the present invention, the abutting portion is configured of a resin, and it is thus possible to realize high workability.

[0010] In a third aspect of the present invention, a first air flow path that communicates with the flavor generating article accommodated in the accommodating portion is formed at the abutting portion in the second aspect.

[0011] According to the third aspect of the present invention, the abutting portion is configured of a resin, and it is thus possible to precisely design the air flow path.

[0012] In a fourth aspect of the present invention, the tubular portion includes a contact portion that comes into contact with the flavor generating article when the flavor generating article is accommodated in the accommodating portion and a separated portion that is adjacent to the contact portion in a circumferential direction and is separated from the flavor generating article, and when the flavor generating article is accommodated in the accommodating portion, a second air flow path that communicates with the first air flow path is formed between the separated portion and the flavor generating article, in the third aspect.

[0013] According to the fourth aspect of the present invention, air introduced into the accommodating portion can be supplied to the flavor generating article through the second air flow path and the first air flow path and reach the inside of a user's mouth, and it is thus not necessary to separately provide, in the flavor inhaler, a flow path for introducing the air supplied to the flavor generating article. Therefore, it is possible to simplify the structure of the flavor inhaler and to reduce the size of the flavor inhaler.

[0014] In a fifth aspect of the present invention, the tubular portion is configured of metal in any of the first to fourth aspects.

[0015] According to the fifth aspect of the present invention, the tubular portion is configured of metal, and it is thus possible to effectively transmit heat from the tubular portion to the flavor generating article.

[0016] In a sixth aspect of the present invention, the tubular portion has a non-cylindrical shape in any of the first to fifth aspects.

[0017] According to the sixth aspect of the present invention, the accommodating portion is configured of the tubular portion and the abutting portion that is formed of a member different from the tubular portion, and it is thus possible to finely work the abutting portion regardless of

the shape of the tubular portion and to improve workability of the accommodating portion even in a case where the tubular portion has an irregular shape such as an oval shape or a square tube shape, for example.

[0018] In a seventh aspect of the present invention, a sealing portion that seals a part between the tubular portion and the abutting portion is further included in any of the first to sixth aspects.

[0019] According to the seventh aspect of the present invention, the part between the tubular portion and the abutting portion is sealed by the sealing portion, the tubular portion and the abutting portion are thus firmly fixed to each other, and high robustness can be achieved.

[0020] In an eighth aspect of the present invention, a heating portion that is disposed at an outer circumference of the tubular portion and is configured to heat the flavor generating article accommodated in the accommodating portion is further included, and the abutting portion and the heating portion do not overlap each other in an axial direction of the accommodating portion in any of the first to seventh aspects.

[0021] According to the eighth aspect of the present invention, the abutting portion and the heating portion do not overlap each other in the axial direction of the accommodating portion, heat from the heating portion is thus unlikely to be transmitted to the abutting portion, and it is possible to prevent degradation of the abutting portion due to the heat.

[0022] In a ninth aspect of the present invention, the abutting portion is engaged with a bottom portion of the tubular portion formed on the other end side of the accommodating portion in any of the first to eighth aspects.

[0023] According to the ninth aspect of the present invention, the abutting portion is engaged with the bottom portion of the tubular portion, and it is thus possible to position and support the abutting portion inside the tubular portion.

[0024] In a tenth aspect of the present invention, a support portion that is engaged with the abutting portion via the tubular portion is further included in any of the first to ninth aspects.

[0025] According to the tenth aspect of the present invention, the support portion is engaged with the abutting portion, and it is thus possible to support the tubular portion by the abutting portion and the support portion.

[0026] In an eleventh aspect of the present invention, a rotation preventing mechanism that prevents relative rotation of the support portion with respect to the tubular portion about an axial direction of the accommodating portion as a rotation axis is further included in the tenth aspect.

[0027] According to the eleventh aspect of the present invention, the rotation preventing mechanism is provided, and it is thus possible to prevent relative rotation of the support portion with respect to the tubular portion.

[0028] In a twelfth aspect of the present invention, the abutting portion forms an air layer on a side opposite to an abutting surface that abuts the flavor generating article

accommodated in the accommodating portion in a state where the abutting portion is engaged with the support portion in the tenth or eleventh aspect.

[0029] According to the twelfth aspect of the present invention, the air layer is formed on the side opposite to the abutting surface of the abutting portion that abuts the flavor generating article, and it is thus possible to prevent a heat loss due to heat transmission from the abutting portion.

[0030] In a thirteenth aspect of the present invention, a bottom portion of the tubular portion formed on the other end side of the accommodating portion is sandwiched between and supported by the abutting portion and the support portion in any of the tenth to twelfth aspects.

[0031] According to the thirteenth aspect of the present invention, the abutting portion and the support portion sandwich and support the bottom portion of the tubular portion, the tubular portion is thus firmly fixed, and high robustness can be achieved.

[0032] In a fourteenth aspect of the present invention, a guide portion that abuts the opening of the tubular portion and guides insertion of the flavor generating article into the tubular portion is further included in any of the first to thirteenth aspects.

[0033] According to the fourteenth aspect of the present invention, the guide portion is provided at the opening of the tubular portion, and it is thus possible to easily insert the flavor generating article into the tubular portion.

[0034] In a fifteenth aspect of the present invention, a cover portion that is disposed to cover a circumference of an abutting location between the tubular portion and the guide portion is further included in the fourteenth aspect.

[0035] According to the fifteenth aspect of the present invention, the cover portion is provided at the abutting location between the tubular portion and the guide portion, and it is thus possible to prevent an aerosol generated in the accommodating portion from leaking from the abutting location between the tubular portion and the guide portion to the inside of a casing of the flavor inhaler.

BRIEF DESCRIPTION OF DRAWINGS

[0036]

Fig. 1A is a schematic front view of a flavor inhaler according to an embodiment.

Fig. 1B is a schematic top view of the flavor inhaler according to the embodiment.

Fig. 1C is a schematic bottom view of the flavor inhaler according to the embodiment.

Fig. 2 is a schematic side sectional view of a flavor generating article.

Fig. 3 is a sectional view of the flavor inhaler along the arrow 3-3 illustrated in Fig. 1B.

Fig. 4A is a perspective view of a chamber.

Fig. 4B is a sectional view of the chamber along the

arrow 4B-4B illustrated in Fig. 4A.

Fig. 5A is a sectional view of the chamber along the arrow 5A-5A illustrated in Fig. 4B.

Fig. 5B is a sectional view of the chamber along the arrow 5B-5B illustrated in Fig. 4B.

Fig. 6 is a perspective view of the chamber and the heating portion.

Fig. 7 is a sectional view illustrated in Fig. 5B in a state where the flavor generating article is disposed at a desired position in the chamber.

Fig. 8 is a perspective view illustrating an air flow path of the flavor inhaler according to the embodiment.

Fig. 9 is an enlarged sectional view of a first holding portion.

Fig. 10 is an enlarged sectional view of a second holding portion.

Fig. 11 is an enlarged sectional view illustrating another embodiment of the first holding portion.

DESCRIPTION OF EMBODIMENTS

[0037] Hereinafter, embodiments of the present invention will be described with reference to the drawings. In the drawings described below, the same reference signs will be applied to the same or corresponding components, and repeated description will be omitted.

[0038] Fig. 1A is a schematic front view of a flavor inhaler 100 according to an embodiment. Fig. 1B is a schematic top view of the flavor inhaler 100 according to the embodiment. Fig. 1C is a schematic bottom view of the flavor inhaler 100 according to the embodiment. In the drawings described in the specification, an X-Y-Z orthogonal coordinate system may be added for convenience of description. In the coordinate system, the Z axis is directed vertically upward, the X-Y plane is disposed to cut the flavor inhaler 100 in the horizontal direction, and the Y axis is disposed to extend from the front surface to the rear surface of the flavor inhaler 100. The Z axis can also be called an insertion direction of a flavor generating article to be accommodated in a chamber 50 of an atomization portion 30, which will be described later, or an axial direction of the chamber 50. Additionally, it is also possible to state that the X axis is a direction that perpendicularly intersects the Y axis and the Z axis and the X axis and the Y axis are radial directions that perpendicularly intersect the axial direction, or the radial directions of the chamber 50.

[0039] The flavor inhaler 100 according to the present embodiment is configured to generate an aerosol containing a flavor by heating a flavor generating article of a stick type having a flavor source containing an aerosol source, for example.

[0040] As illustrated in Figs. 1A to 1C, the flavor inhaler 100 has an outer housing 101 (corresponding to an example of a casing), a slide cover 102, and a switch portion 103. The outer housing 101 configures the outermost housing of the flavor inhaler 100 and has a size with which

it fits in a user's hand. The user can hold the flavor inhaler 100 with his/her hand and inhale the aerosol when the user uses the flavor inhaler 100. The outer housing 101 may be configured by assembling a plurality of members.

5 The outer housing 101 is made of a resin, for example, and may be formed of polycarbonate (PC), an acrylonitrile-butadiene-styrene (ABS) resin, or a polymer alloy or the like containing polyether ether ketone (PEEK) or a plurality of types of polymers, or metal such as aluminum, in particular.

10 **[0041]** The outer housing 101 has an opening, which is not illustrated, for receiving the flavor generating article, and the slide cover 102 is slidably attached to the outer housing 101 to close the opening. Specifically, the slide cover 102 is configured to be movable along an outer surface of the outer housing 101 between a closed position (the position illustrated in Figs. 1A and 1B) at which the opening of the outer housing 101 is closed and an open position at which the opening is open. It is possible to cause the slide cover 102 to move between the closed position and the open position by the user manually operating the slide cover 102, for example. In this manner, the slide cover 102 is able to permit or restrict access to the flavor generating article inside the flavor inhaler 100.

25 **[0042]** The switch portion 103 is used to switch ON and OFF of an operation of the flavor inhaler 100. For example, power is supplied from a power source, which is not illustrated, to a heater, which is not illustrated, and it is possible to heat the flavor generating article without burning the flavor generating article, by the user operating the switch portion 103 in a state where the flavor generating article is inserted into the flavor inhaler 100. Note that the switch portion 103 may be a switch provided outside the outer housing 101 or may be a switch located inside the outer housing 101. In a case where the switch is located inside the outer housing 101, the switch is indirectly pressed by pressing the switch portion 103 on the surface of the outer housing 101. In the present embodiment, an example in which the switch of the switch portion 103 is located inside the outer housing 101 will be described.

40 **[0043]** The flavor inhaler 100 may further have a terminal, which is not illustrated. The terminal can be an interface that connects the flavor inhaler 100 to an external power source, for example. In a case where the power source included in the flavor inhaler 100 is a chargeable battery, the external power source can cause a current to flow to the power source and charge the power source by connecting the external power source to the terminal. Also, data related to the operation of the flavor inhaler 100 may be transmitted to an external device by connecting a data transmission cable to the terminal.

55 **[0044]** Next, the flavor generating article used by the flavor inhaler 100 according to the present embodiment will be described. Fig. 2 is a schematic side sectional view of the flavor generating article 110. In the present embodiment, the flavor inhaler 100 and the flavor gen-

erating article 110 can configure a smoking system. In the example illustrated in Fig. 2, the flavor generating article 110 has a smokable article 111, a tubular member 114, a hollow filter portion 116, and a filter portion 115.

[0045] The smokable article 111 is rolled by a first roll paper 112. The tubular member 114, the hollow filter portion 116, and the filter portion 115 are rolled by a second roll paper 113 that is different from the first roll paper 112. The second roll paper 113 also rolls a part of the first roll paper 112 that rolls the smokable article 111. In this manner, the tubular member 114, the hollow filter portion 116, and the filter portion 115 are coupled to the smokable article 111. However, the second roll paper 113 may be omitted, and the tubular member 114, the hollow filter portion 116, and the filter portion 115 may be coupled to the smokable article 111 by using the first roll paper 112. A lip release agent 117 for promoting the user's lip release from the second roll paper 113 is applied to the outer surface of the second roll paper 113 in the vicinity of an end portion thereof on the side of the filter portion 115. The part of the flavor generating article 110 to which the lip release agent 117 is applied functions as a mouth-piece of the flavor generating article 110.

[0046] The smokable article 111 can contain a flavor source such as tobacco, for example, and an aerosol source. Also, the first roll paper 112 for rolling the smokable article 111 can be a sheet member with breathability. The tubular member 114 can be a paper pipe or a hollow filter. Although the flavor generating article 110 includes the smokable article 111, the tubular member 114, the hollow filter portion 116, and the filter portion 115 in the illustrated example, the configuration of the flavor generating article 110 is not limited thereto. For example, the hollow filter portion 116 may be omitted, and the tubular member 114 and the filter portion 115 may be disposed to be adjacent to each other.

[0047] Next, an internal structure of the flavor inhaler 100 will be described. Fig. 3 is a sectional view of the flavor inhaler 100 along the arrow 3-3 illustrated in Fig. 1B. As illustrated in Fig. 3, an inner housing 10 (corresponding to an example of a casing) is provided inside the outer housing 101 of the flavor inhaler 100. The inner housing 10 is made of a resin, for example, and may be formed of polycarbonate (PC), an acrylonitrile-butadiene-styrene (ABS) resin, or a polymer alloy or the like containing polyether ether ketone (PEEK) or a plurality of types of polymers, or metal such as aluminum, in particular. Note that the inner housing 10 is preferably made of PEEK in terms of heat resistance and strength. A power source portion 20 and the atomization portion 30 are provided in the inner space of the inner housing 10.

[0048] The power source portion 20 includes a power source 21. The power source 21 can be a chargeable battery or a non-chargeable battery, for example. The power source 21 is electrically connected to the atomization portion 30. The power source 21 can thus supply power to the atomization portion 30 to appropriately heat the flavor generating article 110.

[0049] The atomization portion 30 includes a chamber 50 (corresponding to an example of a tubular portion) made of metal and extending in the insertion direction of the flavor generating article 110 (Z-axis direction), a heater 40 that covers a part of the chamber 50, a heat insulating portion 32, and a substantially tubular insertion guide member 34 (corresponding to an example of a guide portion) that abuts an opening 52 (see Fig. 4A) of the chamber 50 as illustrated in the drawing. The chamber 50 is configured to surround the circumference of the flavor generating article 110. The heater 40 is configured to include a heating portion 42 (see Fig. 6) that comes into contact with the outer circumferential surface of the chamber 50 and heats the flavor generating article 110 inserted into the chamber 50.

[0050] Also, a bottom member 36 (corresponding to an example of an abutting portion) is provided at the bottom portion of the chamber 50 as illustrated in the drawing. The bottom member 36 may function as a stopper that abuts the flavor generating article 110 inserted into the chamber 50 in the insertion direction of the flavor generating article 110 and positions the flavor generating article 110. Here, the chamber 50 and the bottom member 36 configure an accommodating portion that accommodates at least a part of the flavor generating article 110. The bottom member 36 may be formed of a resin material, for example. The bottom member 36 has irregularity on the surface which the flavor generating article 110 abuts and may define a first air flow path, which the flavor generating article 110 abuts, through which air may be supplied to an air inlet port of the flavor generating article 110, that is, a first air flow path that communicates with the flavor generating article 110 accommodated in the accommodating portion. The bottom member 36 is made of a resin, for example, and may be formed of polycarbonate (PC), an acrylonitrile-butadiene-styrene (ABS) resin, a polymer alloy or the like containing polyether ether ketone (PEEK) or a plurality of types of polymers, or metal such as aluminum, in particular. Note that the bottom member 36 is preferably formed of a material with a low heat conductivity to prevent heat from being transmitted to the heat insulating portion 32 and the like.

[0051] It is possible to form the accommodating portion in combination of the bottom member 36 that has been finely worked in advance with the chamber 50 by configuring the accommodating portion by the chamber 50 and the bottom member 36 formed of a member that is different from the chamber 50. It is thus possible to obtain the flavor inhaler 100 including the accommodating portion exhibiting high workability and obtained to have a desired fine shape at low cost. Also, it is possible to realize high workability by configuring the bottom member 36 of a resin and thereby to precisely design the first air flow path.

[0052] The heat insulating portion 32 has a substantially tubular shape as a whole and is disposed to cover the chamber 50. The heat insulating portion 32 can in-

clude an aerogel sheet, for example. The insertion guide member 34 is provided between the slide cover 102 at the closed position and the chamber 50. The insertion guide member 34 is made of a resin, for example, and may be formed of polycarbonate (PC), an acrylonitrile-butadiene-styrene (ABS) resin, or a polymer alloy or the like containing polyether ether ketone (PEEK) or a plurality of types of polymers, in particular. Note that the insertion guide member 34 may be formed of metal, glass, ceramics, or the like. Also, the insertion guide member 34 is preferably made of PEEK in terms of heat resistance. The insertion guide member 34 communicates with the outside of the flavor inhaler 100 when the slide cover 102 is at the open position, and the insertion guide member 34 guides insertion of the flavor generating article 110 into the chamber 50 by inserting the flavor generating article 110 into the insertion guide member 34. It is possible to easily insert the flavor generating article 110 into the chamber 50 by providing the insertion guide member 34.

[0053] The flavor inhaler 100 further has a first holding portion 37 and a second holding portion 38 that hold both ends of the chamber 50 and the heat insulating portion 32. The first holding portion 37 is disposed to hold the end portions of the chamber 50 and the heat insulating portion 32 on the negative direction side of the Z axis. The second holding portion 38 is disposed to hold the end portions of the chamber 50 and the heat insulating portion 32 on the side of the slide cover 102 (the positive direction side of the Z axis). Details of the first holding portion 37 and the second holding portion 38 will be described later.

[0054] Next, a structure of the chamber 50 will be described. Fig. 4A is a perspective view of the chamber 50. Fig. 4B is a sectional view of the chamber 50 along the arrow 4B-4B illustrated in Fig. 4A. Fig. 5A is a sectional view of the chamber 50 along the arrow 5A-5A illustrated in Fig. 4B. Fig. 5B is a sectional view of the chamber 50 along the arrow 5B-5B illustrated in Fig. 4B. Fig. 6 is a perspective view of the chamber 50 and the heater 40.

[0055] As illustrated in Figs. 4A and 4B, the chamber 50 may be a tubular member including the opening 52 into which the flavor generating article 110 is inserted and a tubular side wall portion 60 in which the flavor generating article 110 is accommodated. A flange portion 52a is formed at an end portion that defines the opening 52 of the chamber 50. The chamber 50 is preferably formed of a material with heat resistance and a small coefficient of thermal expansion and may be formed of, for example, stainless steel. Note that the chamber 50 may be formed of a resin such as PEEK, glass, ceramics, or the like in addition to metal. It is thus possible to effectively heat the flavor generating article 110 from the chamber 50.

[0056] As illustrated in Figs. 4B and 5B, the side wall portion 60 includes a contact portion 62 and a separated portion 66. When the flavor generating article 110 is disposed at a desired position in the chamber 50, the contact

portion 62 comes into contact with or pressurizes a part of the flavor generating article 110 on the surface that intersects the insertion direction of the flavor generating article 110, and the separated portion 66 is separated from the flavor generating article 110. Note that in the specification, "the desired position in the chamber 50" means the position at which the flavor generating article 110 is appropriately heated or the position of the flavor generating article 110 when the user smokes.

[0057] The sectional shape of the side wall portion 60 that perpendicularly intersects the axial direction of the chamber 50 is an oval shape, that is, a non-cylindrical shape since the side wall portion 60 includes the contact portion 62 and the separated portion 66. At this time, since the accommodating portion is configured of the chamber 50 and the bottom member 36 that is formed of a member different from the chamber 50, it is possible to finely work the bottom member 36 regardless of the shape of the chamber 50 and to improve workability of the accommodating portion even in a case where the chamber 50 has an irregular shape such as an oval shape or a square tube shape, for example.

[0058] The contact portion 62 includes an inner surface 62a and an outer surface 62b. The separated portion 66 includes an inner surface 66a and an outer surface 66b. As illustrated in Fig. 6, the heater 40 is disposed on the outer surface 62b of the contact portion 62. In this manner, heat generated by the heating portion 42 of the heater 40 is transmitted to the flavor generating article 110 in contact with the contact portion 62. The heater 40 is preferably disposed on the outer surface 62b of the contact portion 62 with no gap therebetween. Note that the heater 40 may include an adhesive layer. In that case, the heater 40 including the adhesive layer is preferably disposed on the outer surface 62b of the contact portion 62 with no gap therebetween.

[0059] As illustrated in Figs. 4A and 5B, the outer surface 62b of the contact portion 62 is a planar surface. It is possible to prevent a strip-shaped electrode 48 from being bent in a case where the strip-shaped electrode 48 is connected to the heater 40 disposed on the outer surface 62b of the contact portion 62 as illustrated in Fig. 6 by the outer surface 62b of the contact portion 62 being a planar surface. As illustrated in Figs. 4B and 5B, the inner surface 62a of the contact portion 62 is a planar surface. Also, the thickness of the contact portion 62 is uniform as illustrated in Figs. 4B and 5B.

[0060] As illustrated in Figs. 4A, 4B, and 5B, the chamber 50 has two contact portions 62 in the circumferential direction of the chamber 50, and the two contact portions 62 face each other in parallel with each other. The distance of at least a part between the inner surfaces 62a of the two contact portions 62 is preferably shorter than the width of the flavor generating article 110 inserted into the chamber 50 at the location disposed between the contact portions 62.

[0061] As illustrated in Fig. 5B, the inner surface 66a of the separated portion 66 can have an arc-shaped sec-

tion as a whole in the plane that perpendicularly intersects the longitudinal direction (Z-axis direction) of the chamber 50. Also, the separated portion 66 is disposed to be adjacent to the contact portions 62 in the circumferential direction.

[0062] As illustrated in Fig. 4B, the chamber 50 can have a hole 56a at the bottom portion 56 thereof such that the bottom member 36 illustrated in Fig. 3 penetrates therethrough and is disposed inside the chamber 50. The bottom member 36 can be fixed to the inside of the bottom portion 56 of the chamber 50 with an adhesive or the like. The adhesive may function as a sealing portion that seals the part between the chamber 50 and the bottom member 36. Note that the adhesive interposed between the bottom member 36 and the bottom portion 56 may be configured of a resin material such as an epoxy resin. Instead of this, an inorganic adhesive such as cement or welding may also be used. In this manner, the chamber 50 and the bottom member 36 are firmly fixed to each other, and high robustness can thus be achieved.

[0063] The bottom member 36 provided at the bottom portion 56 supports a part of the flavor generating article 110 inserted into the chamber 50 such that at least a part of the end surface of the flavor generating article 110 is exposed. Also, the bottom portion 56 may support a part of the flavor generating article 110 such that the exposed end surface of the flavor generating article 110 communicates with a clearance 67 (see Fig. 7), which will be described later.

[0064] As illustrated in Figs. 4A and 4B, the chamber 50 preferably has a tubular non-holding portion 54 between the opening 52 and the side wall portion 60. A clearance can be formed between the non-holding portion 54 and the flavor generating article 110 in a state where the flavor generating article 110 is positioned at a desired position in the chamber 50. Also, as illustrated in Figs. 4A and 4B, the chamber 50 preferably has a first guide portion 58 including a tapered surface 58a that connects the inner surface of the non-holding portion 54 to the inner surfaces 62a of the contact portions 62.

[0065] As illustrated in Fig. 6, the heater 40 has a heating portion 42. The heating portion 42 may be a heating track, for example. The heating portion 42 is preferably disposed to heat the contact portions 62 without coming into contact with the separated portion 66 of the chamber 50. In other words, the heating portion 42 is preferably disposed only on the outer surfaces of the contact portions 62. The heating portion 42 may have a difference in heating capability between a part heating the separated portion 66 of the chamber 50 and a part heating the contact portions 62. Specifically, the heating portion 42 may be configured to heat the contact portions 62 to a higher temperature than that of the separated portion 66. For example, disposition densities of the heating track of the heating portion 42 in the contact portions 62 and the separated portion 66 can be adjusted. Also, the heating portion 42 may be wound around the outer circumference of the chamber 50 while exhibiting substantially the same

heating capability over the entire circumference of the chamber 50.

[0066] As illustrated in Fig. 6, the heater 40 preferably includes an electrically insulating member 44 that covers at least one surface of the heating portion 42 in addition to the heating portion 42. In the embodiment, the electrically insulating member 44 is disposed to cover both surfaces of the heating portion 42. Here, the bottom member 36 may be disposed not to overlap the heating portion 42 in the axial direction of the chamber 50. In this manner, heat from the heating portion 42 is unlikely to be transmitted to the bottom member 36, and it is thus possible to prevent degradation of the bottom member 36 due to the heat.

[0067] Fig. 7 is a sectional view illustrated in Fig. 5B in a state where the flavor generating article 110 is disposed at a desired position in the chamber 50. As illustrated in Fig. 7, once the flavor generating article 110 is disposed at a desired position in the chamber 50, the flavor generating article 110 can come into contact with and be pressed by the contact portions 62 of the chamber 50. On the other hand, the clearance 67 is formed between the flavor generating article 110 and the separated portion 66. The clearance 67 can communicate with the opening 52 of the chamber 50 and the end surface of the flavor generating article 110 located in the chamber 50. In this manner, air flowing from the opening 52 of the chamber 50 can pass through the clearance 67 and flow to the inside of the flavor generating article 110. In other words, a second air flow path (clearance 67) is formed between the flavor generating article 110 and the separated portion 66.

[0068] Next, the air flow paths in the flavor inhaler 100 according to the embodiment will be described. Fig. 8 is a perspective view illustrating the air flow paths in the flavor inhaler according to the embodiment. In Fig. 8, illustration of the flavor generating article 110 is omitted. As illustrated in Fig. 8, the second air flow path 150 formed between the flavor generating article 110 and the separated portion 66 communicates with the first air flow path 160 formed at the bottom member 36, and the first air flow path 160 communicates with a third air flow path 170 passing through the inside of the flavor generating article 110.

[0069] In this manner, air introduced into the accommodating portion is supplied to the flavor generating article 110 through the second air flow path 150 and the first air flow path 160 and can reach the inside of a user's mouth, and it is thus not necessary to separately provide, in the flavor inhaler 100, a flow path for introducing the air supplied to the flavor generating article 110. Therefore, it is possible to simplify the structure of the flavor inhaler 100 and to reduce the size of the flavor inhaler 100.

[0070] Next, the structures of the first holding portion 37 and the second holding portion 38 that hold the chamber 50 and the heat insulating portion 32 will be described. Fig. 9 is an enlarged sectional view of the first

holding portion 37. Fig. 10 is an enlarged sectional view of the second holding portion 38.

[0071] First, if the heat insulating portion 32 that covers the chamber 50 is completely fixed to the inner housing 10 or the outer housing 101, there is a concern that when an impact from the outside is applied to the flavor inhaler 100, the impact may not be able to be buffered and the heat insulating portion 32 may break. Also, in a case where the heat insulating portion 32 expands due to heat of the chamber 50 (or the heater 40), there is also a concern that the fixed heat insulating portion 32 causes buckling due to the thermal expansion.

[0072] Thus, the first holding portion 37 and the second holding portion 38 according to the embodiment hold the heat insulating portion 32 such that the heat insulating portion 32 can move in the axial direction of the chamber 50 or the radial direction (for example, the X-axis direction or the Y-axis direction) of the chamber 50 that perpendicularly intersects the axial direction. Note that the first holding portion 37 and the second holding portion 38 may hold the heat insulating portion 32 such that the heat insulating portion 32 can move only in the axial direction of the chamber 50 or may hold the heat insulating portion 32 such that the heat insulating portion 32 can move only in the radial direction that perpendicularly intersects the axial direction.

[0073] As illustrated in Fig. 9, the bottom member 36 is engaged with the bottom portion 56 of the chamber 50. It is thus possible to position and support the bottom member 36 inside the chamber 50. Also, the bottom member 36 provided inside the bottom portion 56 of the chamber 50 includes a shaft portion 36a that projects to the outside of the chamber 50 through a hole 56a of the chamber 50. Additionally, the shaft portion 36a has a flat surface 36b (corresponding to an example of a rotation preventing mechanism) at an end portion. The first holding portion 37 includes a support portion 72, a heater cushion 74 (corresponding to an example of a first restricting portion and one end-side restricting portion), and a ring 85 (corresponding to an example of a second restricting portion).

[0074] The support portion 72 is configured to receive the shaft portion 36a of the bottom member 36 and support the chamber 50. Specifically, the bottom portion 56 of the chamber 50 is sandwiched between and supported by the bottom member 36 and the support portion 72. The support portion 72 is made of a resin, for example, and may be formed of polycarbonate (PC), an acrylonitrile-butadiene-styrene (ABS) resin, a polymer alloy containing polyether ether ketone (PEEK) or a plurality of types of polymers, or the like, in particular. Note that the support portion 72 may be formed of metal, glass, ceramics, or the like. In addition, the support portion 72 is preferably made of PEEK in terms of heat resistance. In this manner, the chamber 50, specifically, the bottom portion 56 of the chamber 50 is sandwiched between and supported by the bottom member 36 and the support portion 72 engaged with the bottom member 36. There-

fore, the chamber 50 is firmly fixed, and high robustness can thus be achieved.

[0075] Also, the support portion 72 includes a flat surface 72a (corresponding to an example of a rotation preventing mechanism) to face the flat surface 36b of the shaft portion 36a. It is possible to prevent relative rotation of the support portion 72 with respect to the chamber 50 by the flat surface 36b of the shaft portion 36a and the flat surface 72a of the support portion 72 being engaged with each other.

[0076] Also, the bottom member 36 forms an air layer 36d on a side opposite to an abutting surface 36c that abuts the flavor generating article 110 accommodated in the accommodating portion in a state where the bottom member 36 is engaged with the support portion 72. In other words, the bottom member 36 does not come into direct contact with the heater cushion 74. It is thus possible to prevent a heat loss due to heat transmission from the bottom member 36.

[0077] The heater cushion 74 is configured to accommodate and support one end of the support portion 72. The heater cushion 74 can be formed of an elastic member such as silicone rubber, for example. Note that in a case where silicone rubber is used, a preferred range of Shore A hardness is 40 to 60 and can be appropriately selected in accordance with deformation of the heater cushion 74. Also, the heater cushion 74 is configured to be positioned at and fixed to the fixed portion 22 that is fixed to the inner housing, which is not illustrated. Note that the fixed portion 22 may be the inner housing itself.

[0078] Here, the heater cushion 74 is formed of an elastic member such as silicon, for example, as described above and is configured to bias the chamber 50 toward the insertion guide member 34, that is, on the positive direction side of the Z axis via the support portion 72. In this manner, sealing is formed between the flange portion 52a of the chamber 50 and the insertion guide member 34, and it is thus possible to prevent an aerosol generated in the chamber 50 due to heating of the flavor generating article 110 from leaking to the inside of the inner housing from a part between the chamber 50 and the insertion guide member 34.

[0079] The heater cushion 74 is disposed to face the heat insulating portion 32 with a gap therebetween and restricts movement of the heat insulating portion 32 in the axial direction of the chamber 50. Therefore, the heat insulating portion 32 is prevented from moving with no limit in the axial direction of the chamber 50, and the heat insulating portion 32 is thus prevented from colliding against another member (such as the inner housing 10, for example). Also, since the heater cushion 74 is formed of an elastic member, it is possible to alleviate a stress applied to the heat insulating portion 32 and thereby to prevent the heat insulating portion 32 from breaking even in a case where the heater cushion 74 comes into contact with the heat insulating portion 32.

[0080] The ring 85 has an opening 85a into which the support portion 72 is inserted and may be sandwiched

between and fixed to the support portion 72 and the heater cushion 74. The ring 85 is made of a resin, for example, and may be formed of polycarbonate (PC), an acrylonitrile-butadiene-styrene (ABS) resin, a polymer alloy containing polyether ether ketone (PEEK) or a plurality of types of polymers, or the like, in particular. Note that the ring 85 may be formed of metal, glass, ceramics, or the like. Also, the ring 85 is preferably made of PEEK in terms of heat resistance. The ring 85 is disposed to face a support material 32a provided at an inner circumferential surface of the heat insulating portion 32 as will be described later with a gap therebetween and restricts movement of the heat insulating portion 32 in the radial direction of the chamber 50. Therefore, the heat insulating portion 32 is prevented from moving with no limit in the radial direction of the chamber 50, and the heat insulating portion 32 is thus prevented from colliding against another member (such as the inner housing 10, for example). Also, it is possible to restrict, from the inside of the heat insulating portion 32, movement of the heat insulating portion 32 in the radial direction of the chamber 50 and thereby to reduce the size of the flavor inhaler 100.

[0081] The heat insulating portion 32 includes the support material 32a and a heat insulating layer 32b provided on the outer circumferential surface of the support material 32a. The support material 32a has a substantially tubular shape, for example, and is disposed to surround the chamber 50. The support material 32a is made of a resin, for example, and may be formed of polycarbonate (PC), an acrylonitrile-butadiene-styrene (ABS) resin, a polymer alloy containing polyether ether ketone (PEEK) or a plurality of types of polymers, or the like, in particular. The heat insulating layer 32b may be an aerogel sheet, for example. Here, the support material 32a is formed to be thinner than the heat insulating layer 32b and has a thickness of equal to or less than 1 mm, preferably equal to or less than 0.5 mm. In this manner, it is possible to reduce the heat capacity of the heat insulating portion 32 itself and thereby to curb a heat loss at the heat insulating portion 32.

[0082] As illustrated in Fig. 10, the flange portion 52a of the chamber 50 is configured to abut the insertion guide member 34 over the entire circumference. Also, the second holding portion 38 includes a gasket 80 (corresponding to an example of a cover portion) and an annular member 90 (corresponding to an example of a cover portion).

[0083] The gasket 80 is disposed in the surroundings of the non-holding portion 54 of the chamber 50 and is configured to support the chamber 50. The gasket 80 is made of a resin, for example, and may be formed of polycarbonate (PC), an acrylonitrile-butadiene-styrene (ABS) resin, or a polymer alloy or the like containing polyether ether ketone (PEEK) or a plurality of types of polymers, in particular. Note that the gasket 80 may be formed of metal, glass, ceramics, or the like. Also, the gasket 80 is preferably made of PEEK in terms of heat resistance. The annular member 90 is configured to be

engaged with and support the insertion guide member 34 and the gasket 80. The annular member 90 can be formed of an elastic member such as silicone rubber, for example. In a case where silicone rubber is used, a preferred range of Shore A hardness is 40 to 60 and can be appropriately selected in accordance with deformation of the annular member 90. Also, the annular member 90 is configured to be positioned at and fixed to the fixed portion 22 that is fixed to the inner housing, which is not illustrated.

[0084] The gasket 80 and the annular member 90 are disposed to cover the circumference at the abutting location between the chamber 50 and the insertion guide member 34. It is thus possible to prevent an aerosol generated in the chamber 50 from leaking from the abutting location between the chamber 50 and the insertion guide member 34 to the inside of the inner housing of the flavor inhaler 100.

[0085] Also, the gasket 80 and the annular member 90 are disposed to face the heat insulating portion 32 with a gap therebetween and restricts movement of the heat insulating portion 32 in the axial direction of the chamber 50. Therefore, the heat insulating portion 32 is prevented from moving with no limit in the axial direction of the chamber 50, and the heat insulating portion 32 is thus prevented from colliding against another member (such as the inner housing 10, for example). Moreover, since the annular member 90 is formed of an elastic member, it is possible to alleviate a stress applied to the heat insulating portion 32 and thereby to prevent the heat insulating portion 32 from breaking even in a case where the annular member 90 comes into contact with the heat insulating portion 32.

[0086] Also, the gasket 80 is disposed to face the inner circumferential surface of the heat insulating portion 32 with a gap therebetween and restricts movement of the heat insulating portion 32 in the radial direction of the chamber 50. Therefore, the heat insulating portion 32 is prevented from moving with no limit in the radial direction of the chamber 50, and the heat insulating portion 32 is thus prevented from colliding against another member (such as the inner housing 10, for example). Additionally, it is possible to restrict, from the inside of the heat insulating portion 32, movement of the heat insulating portion 32 in the radial direction of the chamber 50 and thereby to reduce the size of the flavor inhaler 100.

[0087] Here, when the distance from the heater cushion 74 to the gasket 80 and the annular member 90, specifically, the distance from the heater cushion 74 to the gasket 80 and the annular member 90 at the position facing the heat insulating portion 32 is defined as L1, and the length of the heat insulating portion 32 in the axial direction is defined as L2, a relationship of $L1 > L2$ is preferably satisfied. According to this, it is possible to dispose the heat insulating portion 32 at a non-contact position with respect to the heater cushion 74, the gasket 80, and the annular member 90. Therefore, it is possible to prevent a stress from the heater cushion 74, the gasket

80, and the annular member 90 from being applied to the heat insulating portion 32.

[0088] Note that the heater cushion 74 is positioned at and fixed to the fixed portion 22 in the present embodiment according to the above description, the present invention is not limited thereto. Fig. 11 is an enlarged sectional view illustrating another aspect of the first holding portion. As illustrated in Fig. 12, the first holding portion 137 has a ring 172 (corresponding to an example of a support portion) and a heater cushion 174. Also, the bottom member 36 provided at the bottom portion 56 of the chamber 50 has a shaft portion 36a projecting to the outside of the chamber 50 through the hole 56a of the chamber 50.

[0089] The ring 172 is configured to abut the bottom portion 56 of the chamber 50 and support the chamber 50. Also, the ring 172 has, at its center part, a hole 172a through which the shaft portion 36a of the bottom member 36 penetrates. The ring 172 is made of a resin, for example, and may be made of polycarbonate (PC), an acrylonitrile-butadiene-styrene (ABS) resin, or a resin such as PEEK from a polymer alloy or the like containing polyether ether ketone (PEEK) or a plurality of types polymers, in particular.

[0090] The heater cushion 174 is configured to accommodate and support one end of the ring 172. Also, the heater cushion 174 has, at its center part, a hole 174a through which the shaft portion 36a of the bottom member 36 penetrates. The heater cushion 174 may be formed of an elastic member such as silicon, for example.

[0091] The bottom member 36 is configured such that the shaft portion 36a is positioned at and fixed to the fixed portion 22 that is fixed to the inner housing, which is not illustrated. Note that the fixed portion 22 may be the inner housing itself.

[0092] Even with the first holding portion 137 with such a structure, sealing is formed between the flange portion 52a of the chamber 50 and the insertion guide member 34 by the heater cushion 174 biasing the chamber 50 toward the insertion guide member 34, and it is thus possible to prevent an aerosol generated in the chamber 50 due to heating of the flavor generating article 110 from leaking to the inside of the inner housing from the part between the chamber 50 and the insertion guide member 34.

[0093] Although the embodiment of the present invention has been described above, the present invention is not limited to the above embodiment, and various modification can be made within the scope of the technical idea described in the claims, the specification, and the drawings. Note that any shapes and materials that are not directly described in the specification and the drawings also fall within the scope of the technical idea of the invention of the present application as long as the effects and the advantages of the invention of the present application can be achieved.

[0094] For example, although the flavor inhaler 100 according to the present embodiment has a so-called coun-

terflow-type air flow path through which air flowing from the opening 52 of the chamber 50 is supplied to the end surface of the flavor generating article 110, the present invention is not limited thereto, and the flavor inhaler 100 may have a so-called bottom flow-type air flow path through which air is supplied from the bottom portion 56 of the chamber 50 to the inside of the chamber 50. Also, the heating portion 42 is not limited to a resistance heating type and may be an induction heating type. In that case, the heating portion 42 can heat the chamber 50 through induction heating. Also, in a case where the flavor generating article 110 has a susceptor, the heating portion 42 can heat the susceptor of the flavor generating article 110 through induction heating.

REFERENCE SIGNS LIST

[0095] 32 Heat insulating portion

34 Insertion guide member

36 Bottom member

36b Flat surface

36d Air layer

37 First holding portion

38 Second holding portion

42 Heating portion

50 Chamber

52 Opening

62 Contact portion

66 Separated portion

72 Support portion

72a Flat surface

74 Heater cushion

80 Gasket

85 Ring

90 Annular member

100 Flavor inhaler

110 Flavor generating article

150 Second air flow path

160 First air flow path

137 First holding portion

172 Ring

174 Heater cushion

Claims

1. A flavor inhaler comprising:

an accommodating portion that includes an opening formed at one end and accommodates at least a part of a flavor generating article via the opening, wherein the accommodating portion includes

a tubular portion that surrounds a circumference of the flavor generating article, and an abutting portion that is disposed at the

- other end of the accommodating portion inside the tubular portion, is formed of a member that is different from the tubular portion, and abuts the flavor generating article accommodated in the accommodating portion.
2. The flavor inhaler according to claim 1, wherein the abutting portion is configured of a resin.
 3. The flavor inhaler according to claim 2, wherein a first air flow path that communicates with the flavor generating article accommodated in the accommodating portion is formed at the abutting portion.
 4. The flavor inhaler according to claim 3,

wherein the tubular portion includes a contact portion that comes into contact with the flavor generating article when the flavor generating article is accommodated in the accommodating portion and a separated portion that is adjacent to the contact portion in a circumferential direction and is separated from the flavor generating article, and

when the flavor generating article is accommodated in the accommodating portion, a second air flow path that communicates with the first air flow path is formed between the separated portion and the flavor generating article.
 5. The flavor inhaler according to any one of claims 1 to 4, wherein the tubular portion is configured of metal.
 6. The flavor inhaler according to any one of claims 1 to 5, wherein the tubular portion has a non-cylindrical shape.
 7. The flavor inhaler according to any one of claims 1 to 6, further comprising:

a sealing portion that seals a part between the tubular portion and the abutting portion.
 8. The flavor inhaler according to any one of claims 1 to 7, further comprising:

a heating portion that is disposed at an outer circumference of the tubular portion and is configured to heat the flavor generating article accommodated in the accommodating portion, wherein the abutting portion and the heating portion do not overlap each other in an axial direction of the accommodating portion.
 9. The flavor inhaler according to any one of claims 1 to 8, wherein the abutting portion is engaged with a bottom portion of the tubular portion formed on the
- other end side of the accommodating portion.
10. The flavor inhaler according to any one of claims 1 to 9, further comprising:

a support portion that is engaged with the abutting portion via the tubular portion.
 11. The flavor inhaler according to claim 10, further comprising:

a rotation preventing mechanism that prevents relative rotation of the support portion with respect to the tubular portion about an axial direction of the accommodating portion as a rotation axis.
 12. The flavor inhaler according to claim 10 or 11, wherein the abutting portion forms an air layer on a side opposite to an abutting surface that abuts the flavor generating article accommodated in the accommodating portion in a state where the abutting portion is engaged with the support portion.
 13. The flavor inhaler according to any one of claims 10 to 12, wherein a bottom portion of the tubular portion formed on the other end side of the accommodating portion is sandwiched between and supported by the abutting portion and the support portion.
 14. The flavor inhaler according to any one of claims 1 to 13, further comprising:

a guide portion that abuts the opening of the tubular portion and guides insertion of the flavor generating article into the tubular portion.
 15. The flavor inhaler according to claim 14, further comprising:

a cover portion that is disposed to cover a circumference of an abutting location between the tubular portion and the guide portion.

Fig. 1A

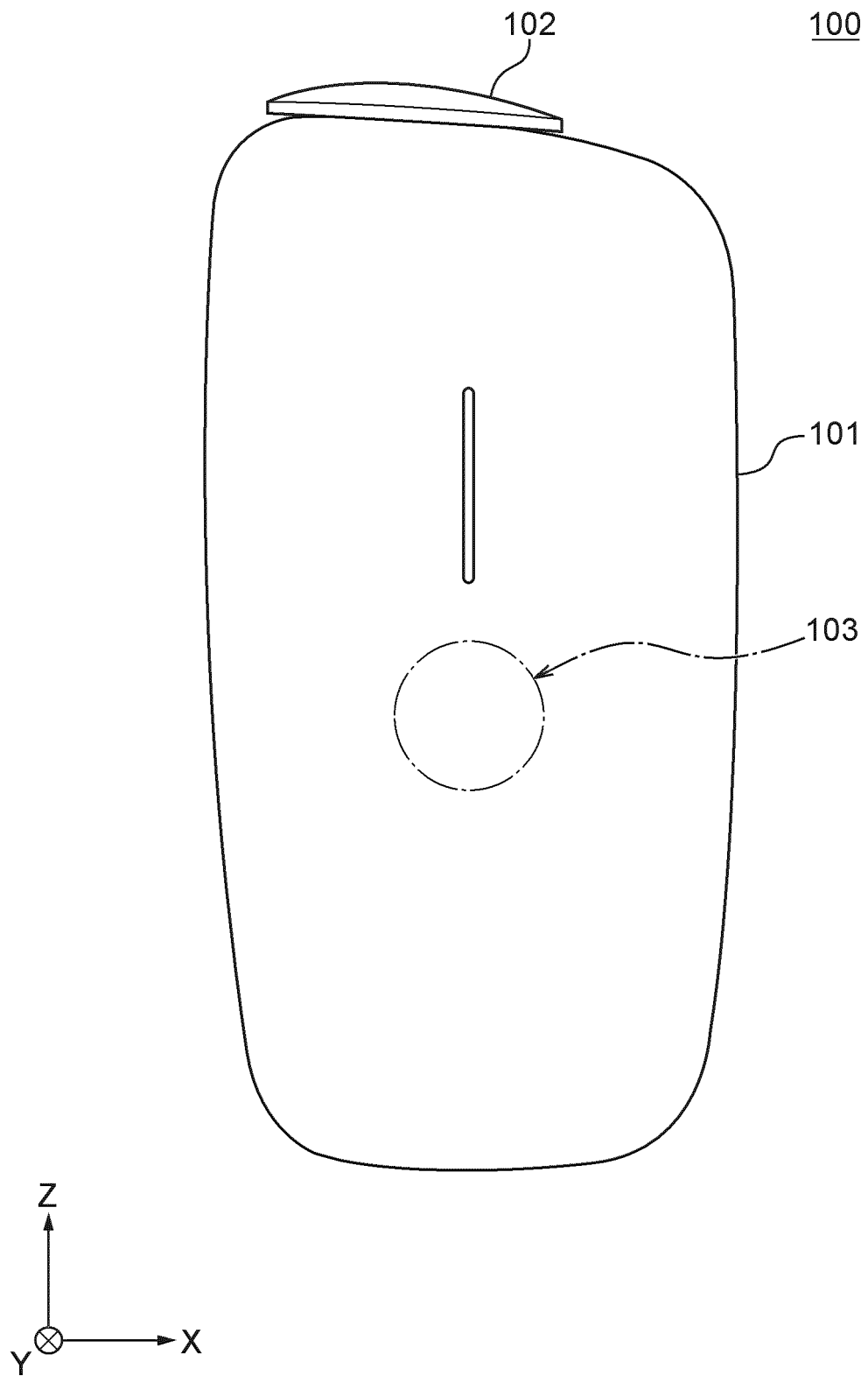


Fig. 1B

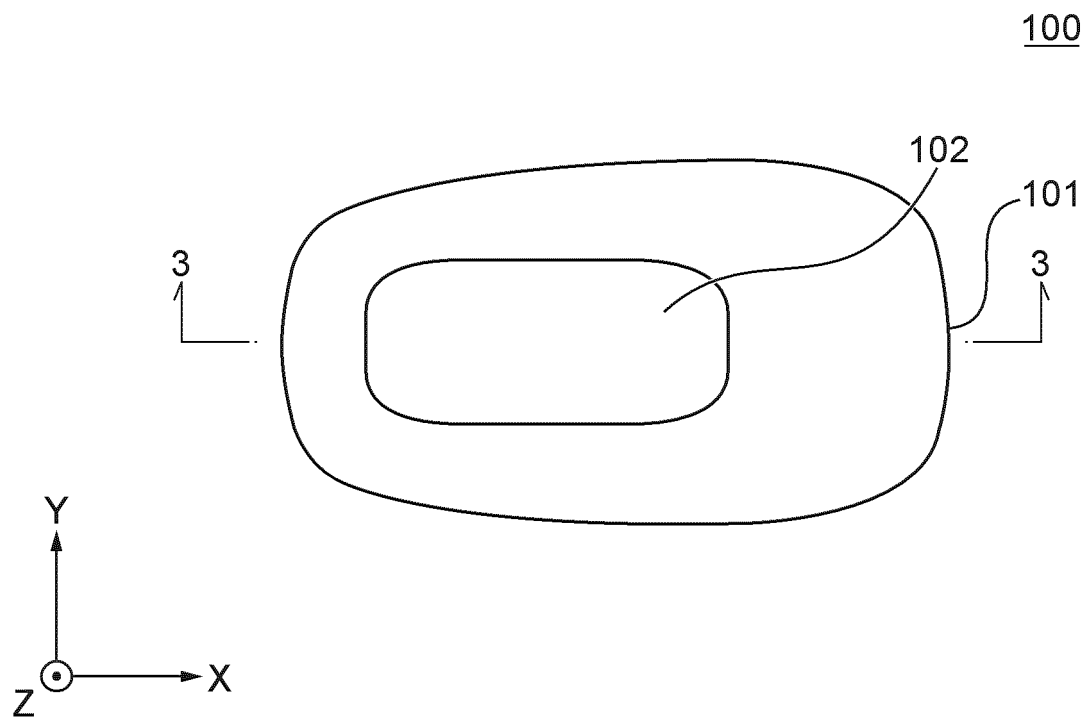


Fig. 1C

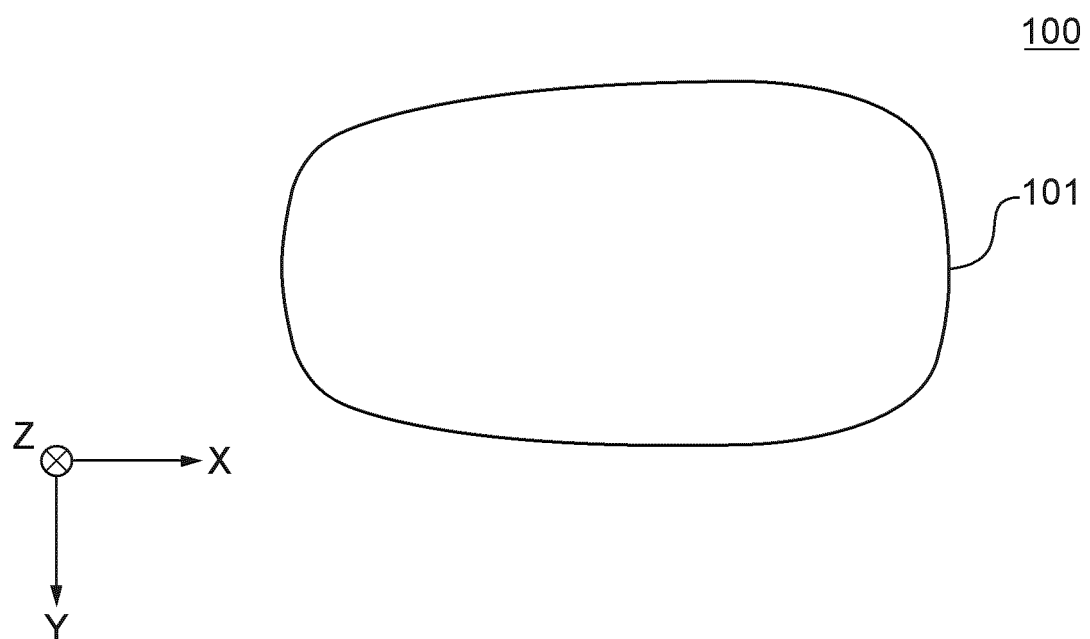


Fig. 2

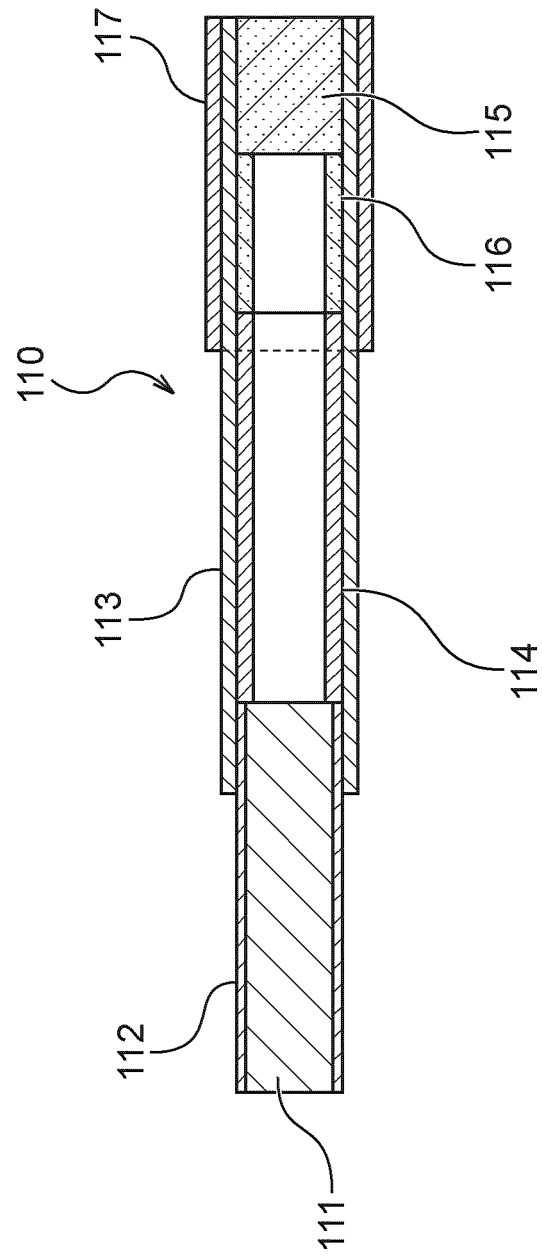


Fig. 3

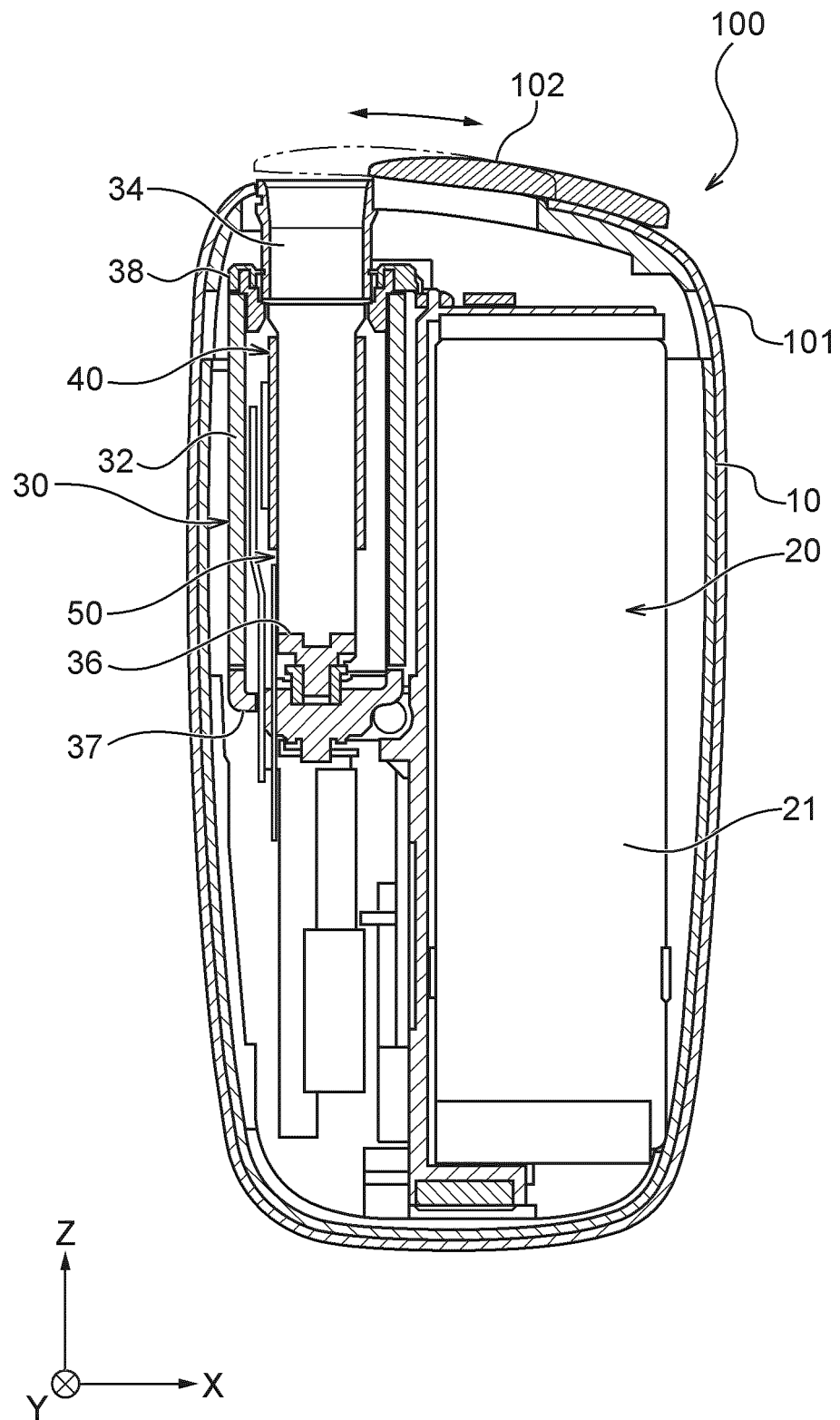


Fig. 4A

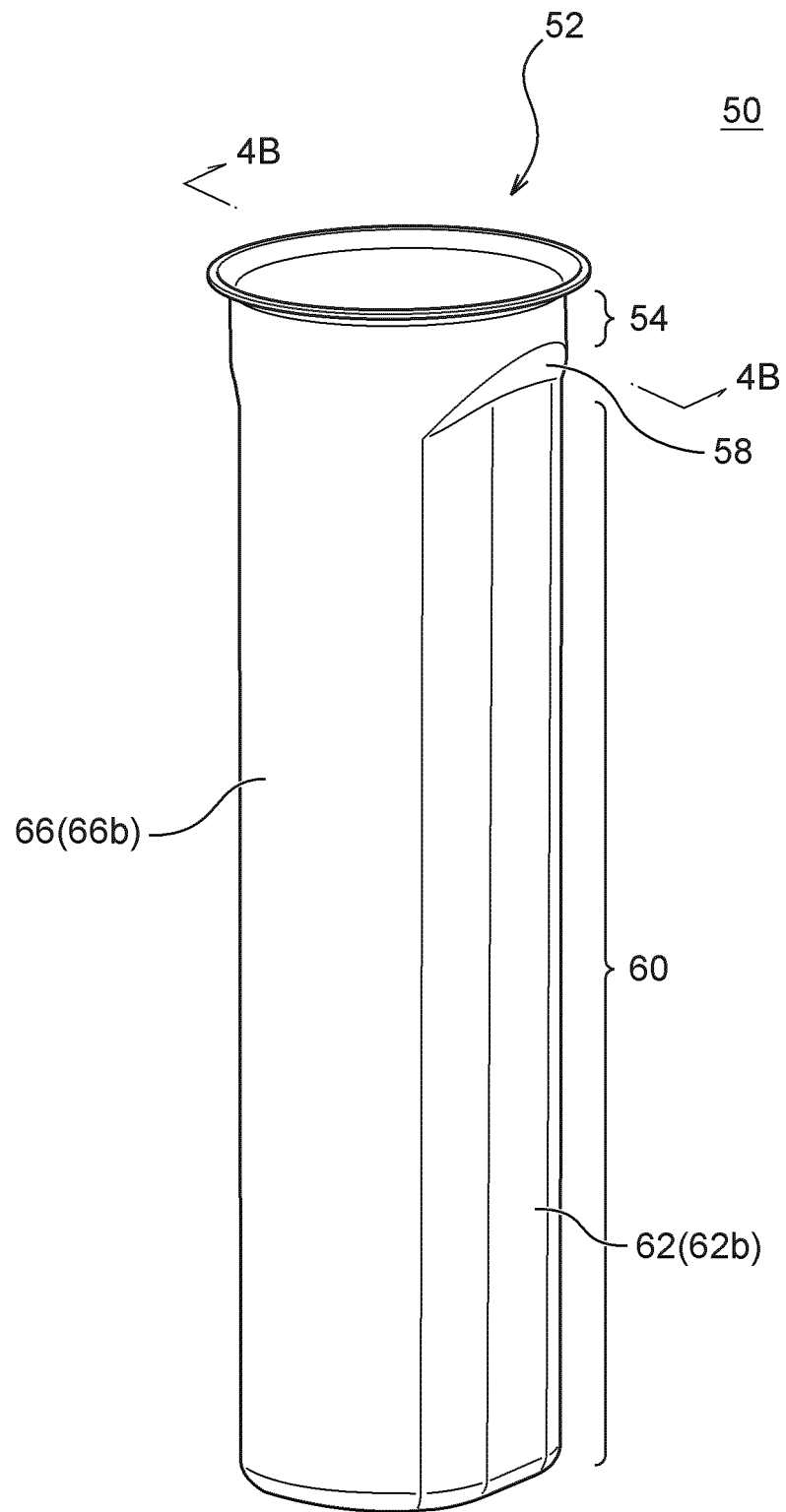


Fig. 4B

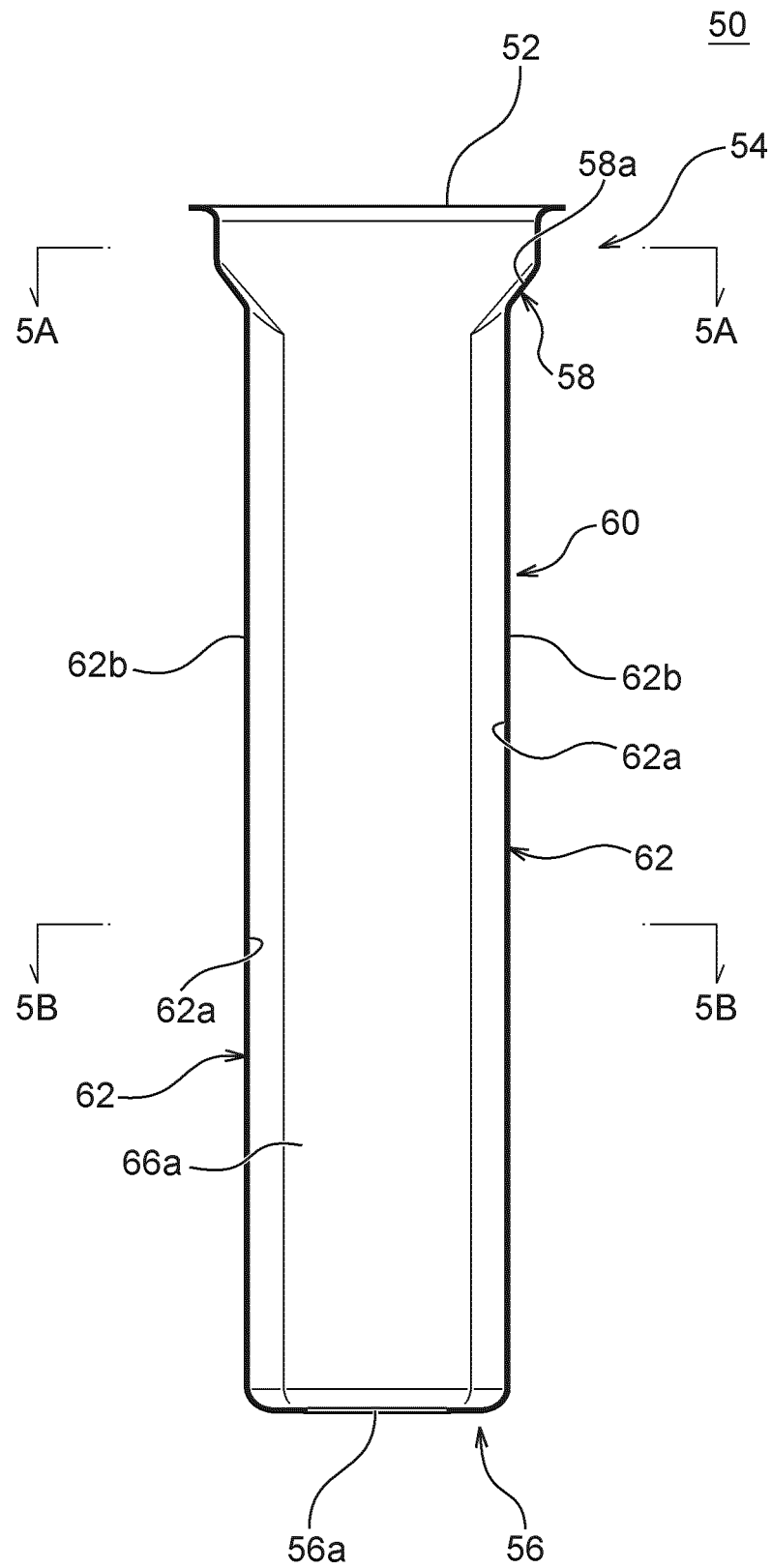


Fig. 5A

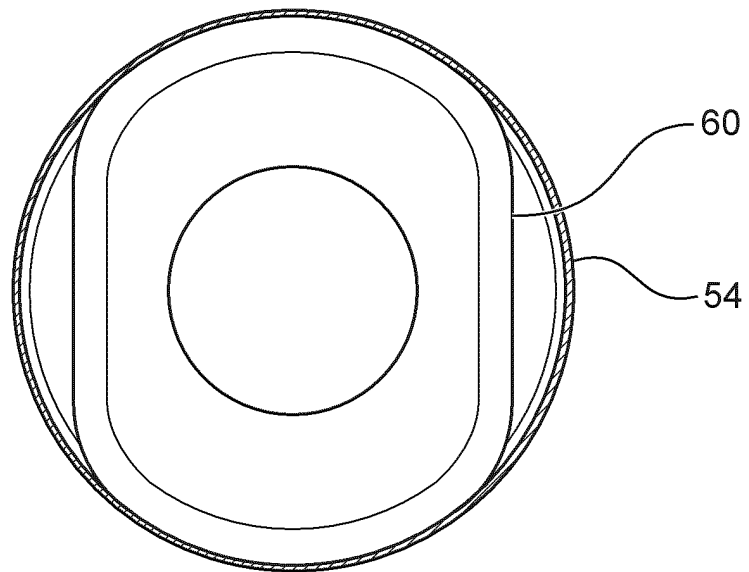


Fig. 5B

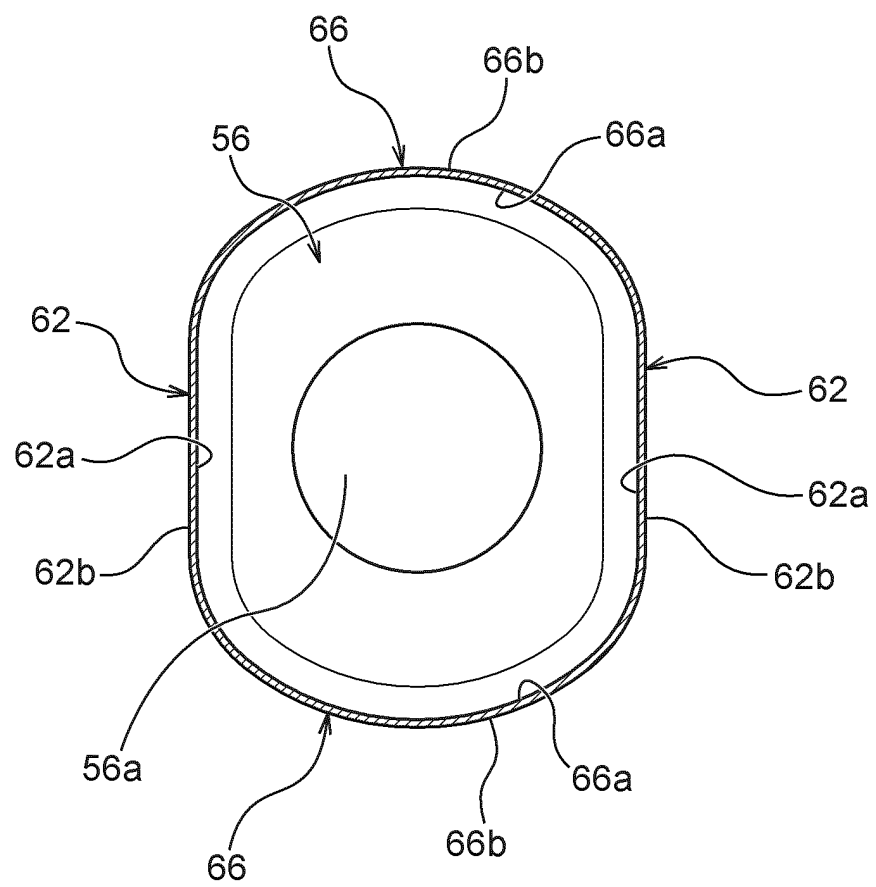


Fig. 6

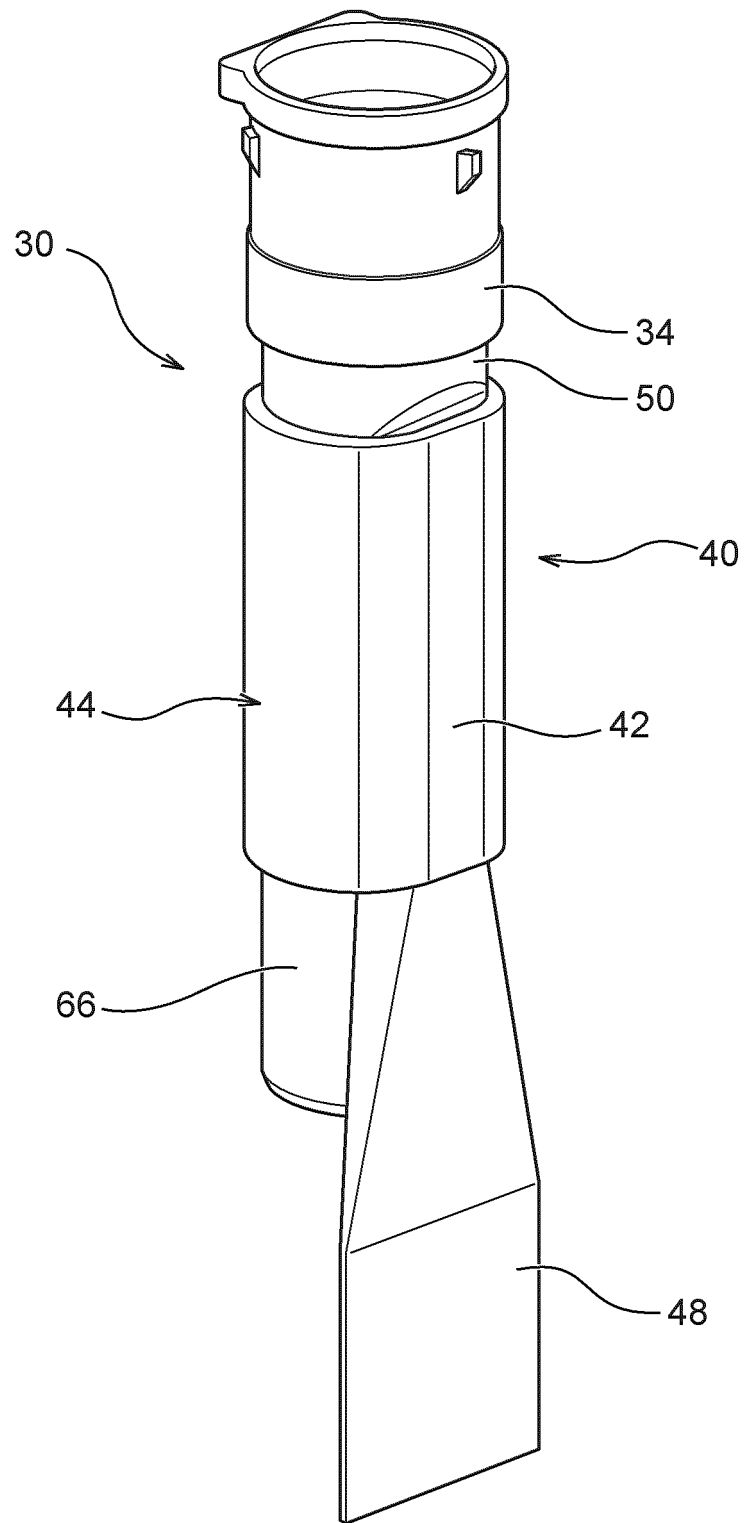


Fig. 7

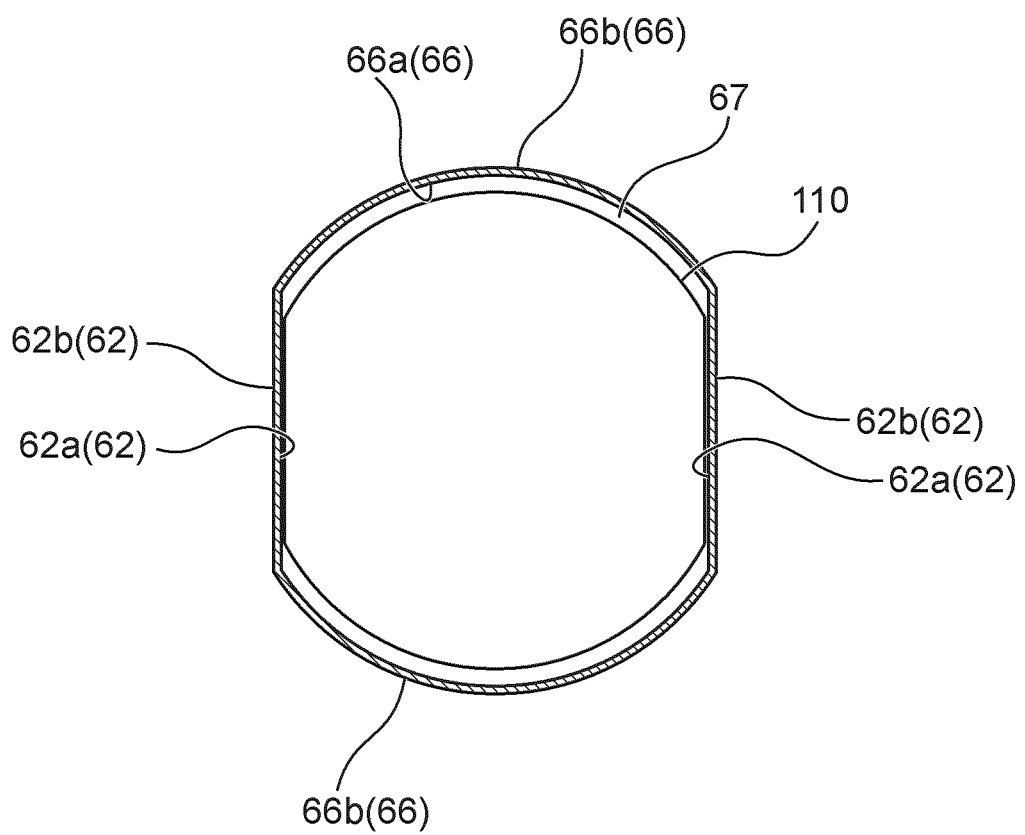


Fig. 8

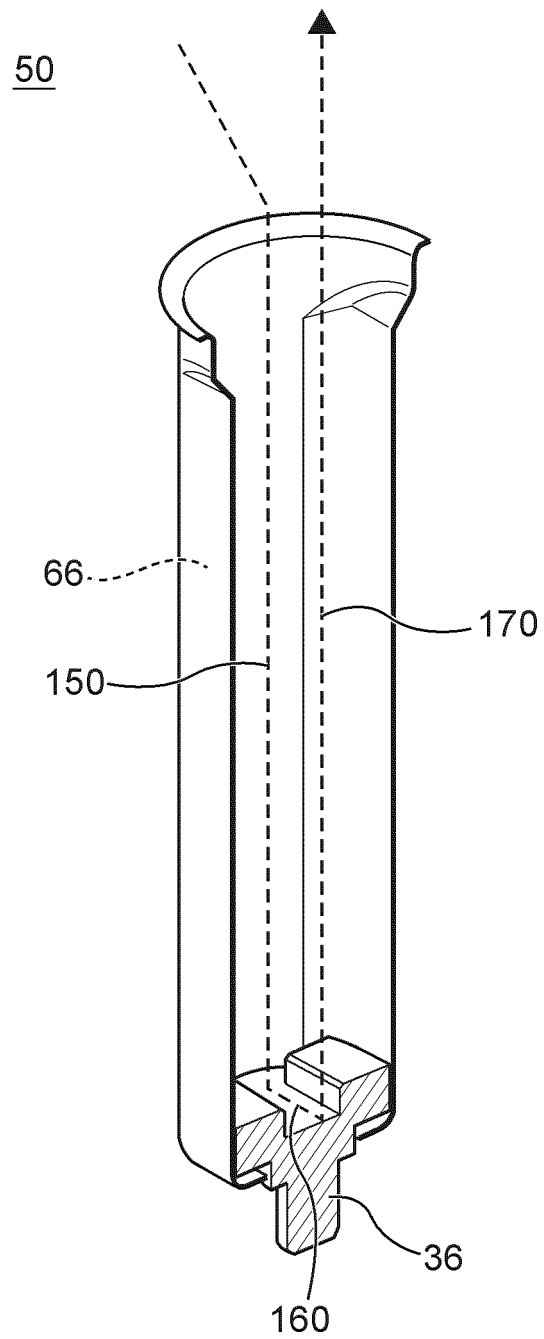


Fig. 9

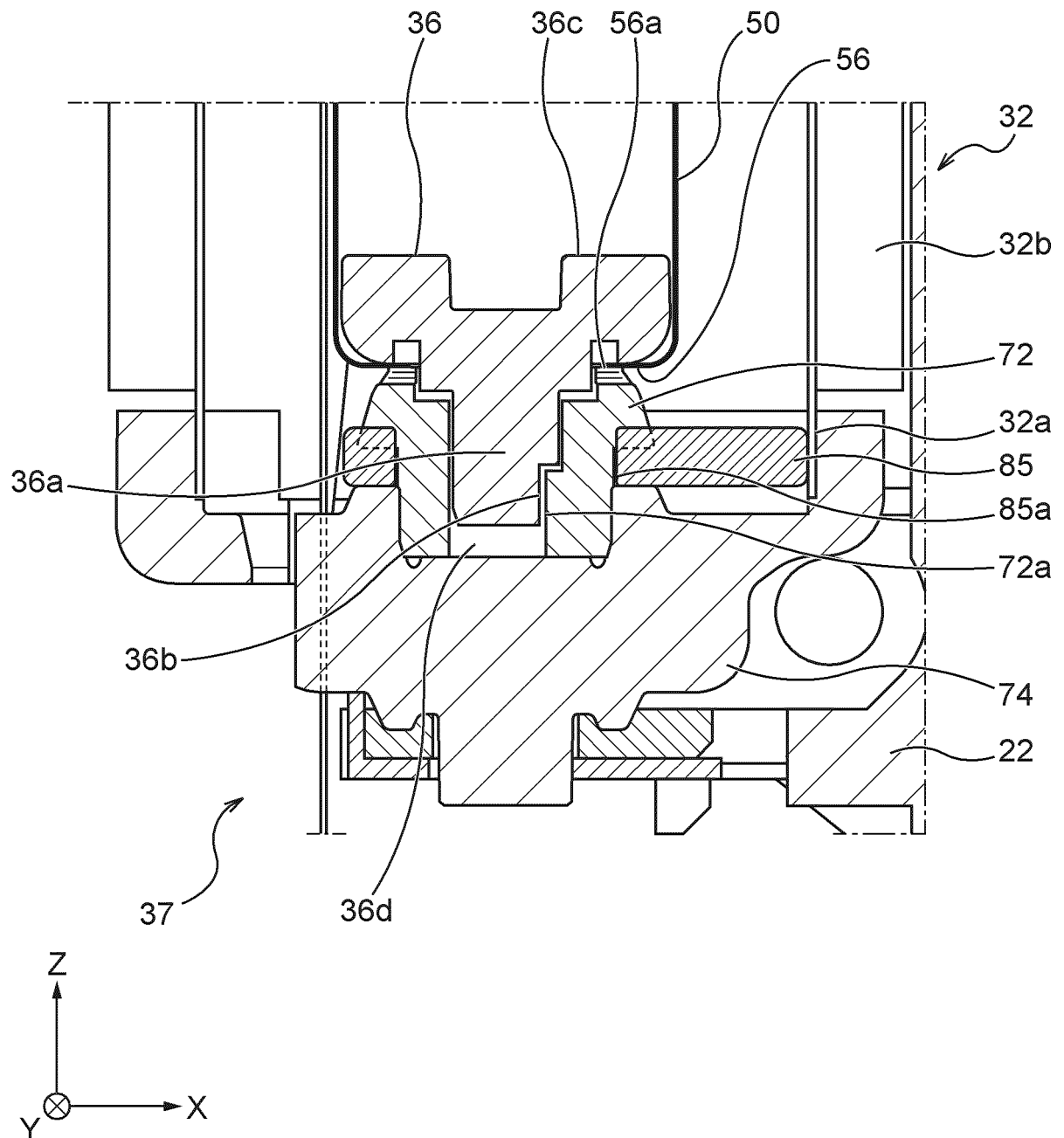


Fig. 10

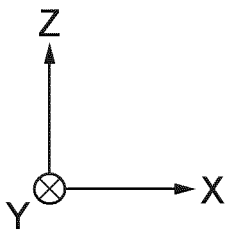
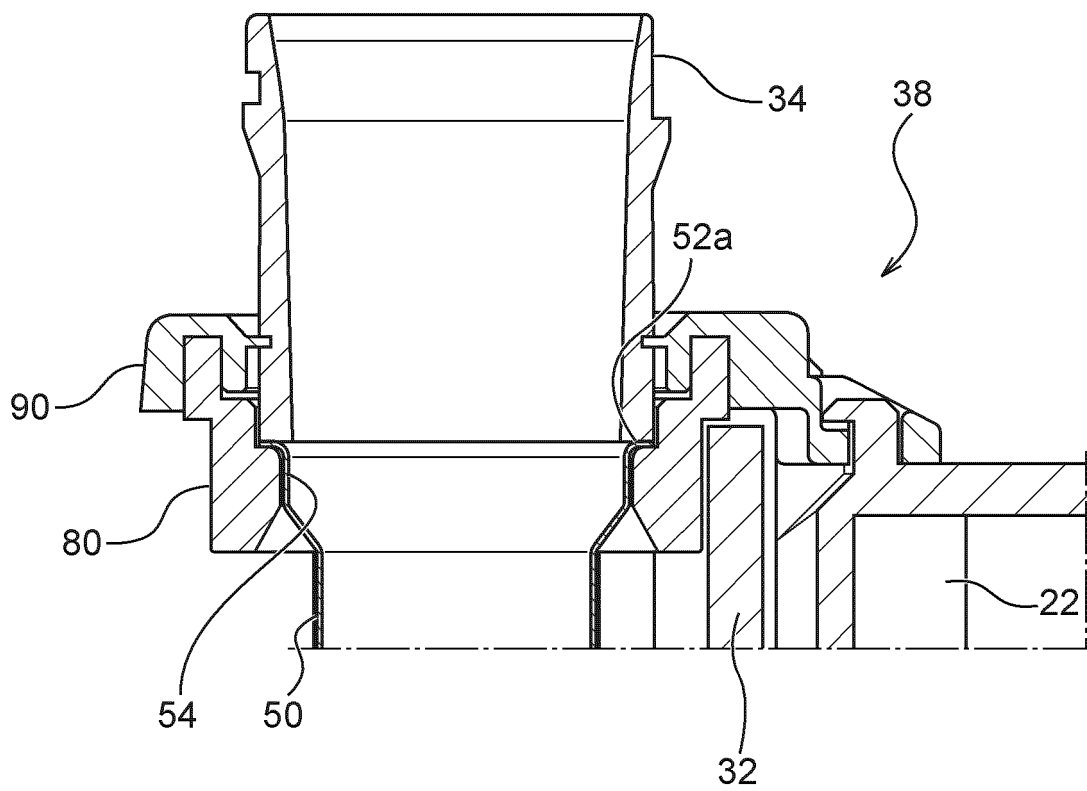
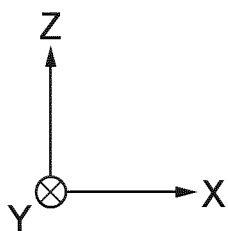
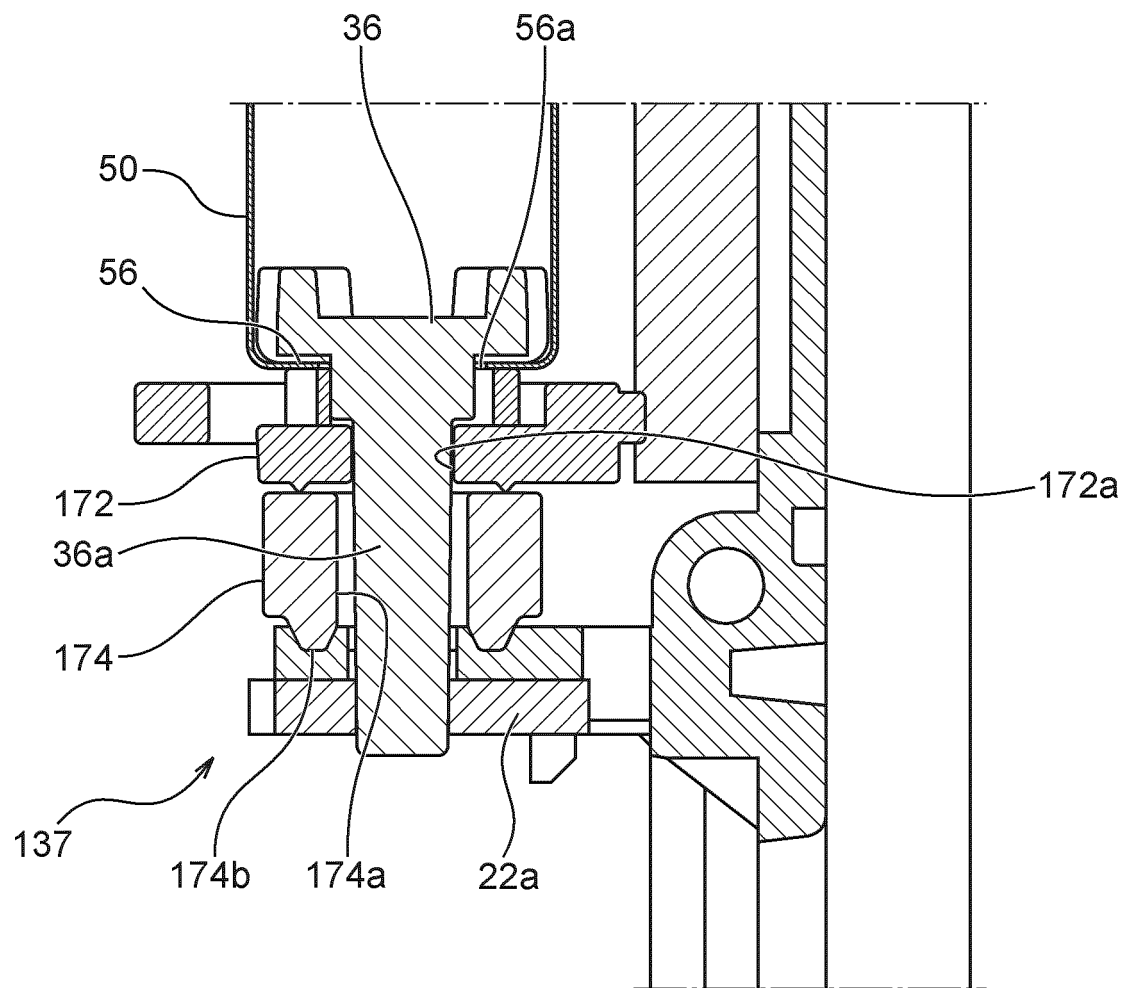


Fig. 11



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2020/046198

A. CLASSIFICATION OF SUBJECT MATTER

A24F 40/40 (2020.01) i

FI: A24F40/40

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A24F40/40

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Published examined utility model applications of Japan 1922-1996

Published unexamined utility model applications of Japan 1971-2021

Registered utility model specifications of Japan 1996-2021

Published registered utility model applications of Japan 1994-2021

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 2020-516267 A (KT&G CORPORATION) 11 June 2020 (2020-06-11) paragraphs [0027]-[0230], fig. 1-20F	1, 5, 9-10, 14-15
A		2-4, 6-8, 11- 13
A	US 2020/0008477 A1 (SHENZHEN IVPS TECHNOLOGY CO., LTD.) 09 January 2020 (2020-01-09) entire text, all drawings	1-15



Further documents are listed in the continuation of Box C.



See patent family annex.

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"P" document published prior to the international filing date but later than the priority date claimed

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
10 February 2021 (10.02.2021)Date of mailing of the international search report
22 February 2021 (22.02.2021)Name and mailing address of the ISA/
Japan Patent Office
3-4-3, Kasumigaseki, Chiyoda-ku,
Tokyo 100-8915, Japan

Authorized officer

Telephone No.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/JP2020/046198

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
JP 2020-516267 A	11 Jun. 2020	US 2020/0170298 A1 paragraphs [0046]-[0248], fig. 1-20F WO 2018/190605 A2 EP 3590367 A1 CN 210203368 U	
US 2020/0008477 A1	09 Jan. 2020		

REFERENCES CITED IN THE DESCRIPTION

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