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(71) Applicant: **Japan Tobacco Inc.**
Tokyo 105-6927 (JP)

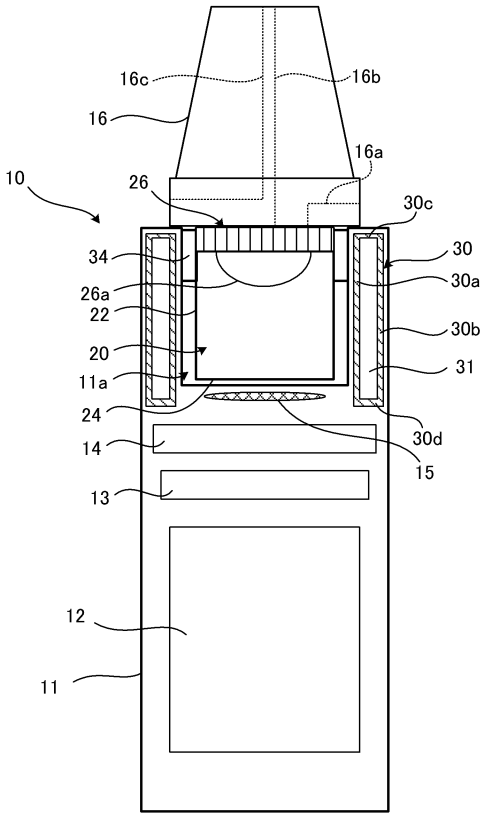
(72) Inventors:
- **YAMADA, Manabu**
  Tokyo 130-8603 (JP)
- **FUJITA, Ryoji**
  Tokyo 130-8603 (JP)
- **OISHI, Kei**
  Tokyo 130-8603 (JP)

(74) Representative: **Hoffmann Eitle**
Patent- und Rechtsanwälte PartmbB
Arabellastraße 30
81925 München (DE)

(54) **CARTRIDGE AND FLAVOR INHALER**

(57) Provided are a cartridge having a novel structure and a flavor inhaler. A cartridge for a flavor inhaler is provided. The cartridge includes a container that accommodates at least a flavor source. The container includes a cylindrical side wall, a bottom wall made of conductive material and provided to a first end of the side wall, and a porous structure arranged to close at least a part of an opening of a second end of the side wall.

Fig. 1



EP 3 918 932 A1

Description

TECHNICAL FIELD

[0001] The invention relates to cartridges and flavor inhalers.

BACKGROUND ART

[0002] Flavor inhalers for inhalation of flavors or the like without material burning have been known. Such flavor inhalers include, for example, a smoking material heating device that forms aerosol by heating smoking material that comprises tobacco containing volatile compounds (see Patent Literature 1). In the aerosol-generating system discussed in Patent Literature 1, an aerosol-forming substrate and a susceptor are enclosed in a capsule, and the susceptor is inductively heated by an induction coil arranged laterally around the capsule.

CITATION LIST

PATENT LITERATURE

[0003] PTL 1: International Publication No. 2017/068095

SUMMARY OF INVENTION

TECHNICAL PROBLEM

[0004] An object of the invention is to provide a cartridge having a novel structure and a flavor inhaler.

SOLUTION TO PROBLEM

[0005] One embodiment of the invention provides a cartridge for a flavor inhaler. The cartridge includes a container that accommodates at least a flavor source. The container includes a cylindrical side wall, a bottom wall made of conductive material and provided to a first end of the side wall, and a porous structure arranged to close at least a part of an opening of a second end of the side wall.

BRIEF DESCRIPTION OF DRAWINGS

[0006]

Fig. 1 is a schematic cross-sectional view of a flavor inhaler according to the present embodiment.

Fig. 2 is a top view of a pod as one example which includes heat releasing members on a side wall thereof.

Fig. 3 is a side view of a pod as another example which includes a heat releasing member on a side wall thereof.

Fig. 4 shows a state in which a seal member of the pod shown in Fig. 2 is broken.

Fig. 5 is a plan view of a pod as a still another example.

Fig. 6 is a plan view of a pod as a still another example.

DESCRIPTION OF EMBODIMENTS

[0007] Embodiments of the invention will be discussed with reference to the attached drawings. In the drawings explained below, similar or corresponding constituent elements are provided with the same reference signs, and overlapping explanation will be omitted.

[0008] Fig. 1 is a schematic cross-sectional view of a flavor inhaler according to the present embodiment. A flavor inhaler 10 according to the present embodiment is configured to heat an aerosol source and a flavor source which are placed in a pod 20 (which is an example of a container) and thus generate aerosol containing a flavor. More specifically, the pod 20 contains the aerosol source in a liquid state and the flavor source in a solid state with a predetermined ratio by weight. The ratio by weight of the aerosol source to the flavor source is, for example, in a range from 3:1 to 20:1. In the present embodiment, a fluent material containing a liquid and a solid is referred to as slurry. The slurry preferably contains a liquid and a flavor source in a solid state. For example, water may be used as the liquid forming the slurry. The liquid is preferably an aerosol source such as glycerin and propylene glycol. The ratio by weight of the liquid to the solid which form the slurry is, as mentioned above, in a range from 3:1 to 20:1 but preferably from 5:1 to 15:1. The slurry contained in the pod 20 has a weight ranging, for example, from 0.05 g to 0.5 g but preferably from 0.1 g to 0.3 g.

[0009] After use, the pod 20 may be removed from the flavor inhaler 10 and discarded. A fresh pod 20 then may be used in the flavor inhaler 10. In short, the pod 20 is a cartridge used in the flavor inhaler 10.

[0010] As shown in Fig. 1, the flavor inhaler 10 of the present embodiment includes a housing 11, a battery 12, a controller 13, an electromagnetic shield 14, an induction coil 15, a mouthpiece 16, and an insulating material 30. The housing 11 contains inside the battery 12, the controller 13, the electromagnetic shield 14, the induction coil 15, and the insulating material 30. As in the figure, the mouthpiece 16, the pod 20, the induction coil 15, the electromagnetic shield 14, the controller 13, and the battery 12 are aligned in a longitudinal direction of the flavor inhaler 10. The housing 11 may be dividable into two or more parts.

[0011] The battery 12 may be, for example, a rechargeable or non-rechargeable battery. The battery 12 is electrically connected to the induction coil 15 via the controller 13. This allows the battery 12 to supply electric power to the induction coil 15 so as to properly heat the slurry contained in the pod 20.

[0012] The controller 13 includes, for example, a microprocessor or the like and is capable of controlling the

power supply from the battery 12 to the induction coil 15. The controller 13 is thus capable of controlling the heating of the slurry by the induction coil 15. According to the present embodiment, the electromagnetic shield 14 is arranged between the induction coil 15 and the controller 13 in a longitudinal direction of the housing 11. The electromagnetic shield 14 thus inhibits an electromagnetic wave generated by the induction coil 15 from reaching the controller 13. According to the present embodiment, the electromagnetic shield 14 may be made, for example, of ferritic metal material. The electromagnetic shield 14 is not particularly limited in shape but preferably has a disc-like shape conforming to the shape of the induction coil 15. As shown in Fig. 1, the electromagnetic shield 14 preferably has a width or diameter that is larger than a largest width of the induction coil 15 in a transverse direction orthogonal to the longitudinal direction. This more reliably inhibits the electromagnetic wave generated by the induction coil 15 from reaching the controller 13.

[0013] The housing 11 is provided in a mouthpiece-side end portion (on a mouthpiece 16-side) with a cavity 11a for the pod 20 to be placed. The pod 20 includes a substantially cylindrical side wall 22 and a bottom wall 24 that closes an end portion of the side wall 22. The induction coil 15 is arranged to face the bottom wall 24 of the pod 20 to be closer to the battery 12 than the bottom wall 24 of the pod 20 placed in the cavity 11a of the housing 11. According to the present embodiment, the pod 20 may be made of conductive material at least in the bottom wall 24. To be specific, the side wall 22 and the bottom wall 24 of the pod 20 are preferably made of SUS (stainless steel). SUS has a lower heat conductivity than aluminum. When the bottom wall 24 generates heat, therefore, the heat of the bottom wall 24 is not easily transmitted to the side wall 22 and yet efficiently transmitted to the slurry in the pod 20. This allows the bottom wall 24 to function as a susceptor that is heated by the induction coil 15. It is then preferable that a surface (outer surface) of the bottom wall 24 which faces the induction coil 15 be flat.

[0014] The induction coil 15 is configured to inductively heat the bottom wall 24 of the pod 20. The induction coil 15 is preferably formed to have a substantially plate-like shape as a whole as in the figure. According to the present embodiment, the entire induction coil 15 is arranged within a region having smaller area than the bottom wall 24 of the pod 20. In other words, as viewed in the longitudinal direction, the induction coil 15 is arranged at such a position as to overlap with the bottom wall 24 and located inside an edge defining the bottom wall 24. The induction coil 15 is arranged in substantially parallel with the bottom wall 24.

[0015] If the induction coil 15 is arranged to face the bottom wall 24 of the pod 20 as in the present embodiment, induction current is less likely to generate outside the flavor inhaler 10, as compared to a case in which the induction coil 15 is arranged around the side wall 22 of the pod 20. If there is another electronic device near the flavor inhaler 10, the electronic device is less likely to be affected by the induction current caused by the induction coil 15. According to the present embodiment, moreover, since the bottom wall 24 of the pod 20 is heated, the temperature of an upper portion of the pod 20 is difficult to increase. Therefore, if a seal member 28 is provided at an opening of the pod 20 as mentioned below, an adhesive agent for adhesion between the pod 20 and the seal member 28 is prevented from being melted.

[0016] When the slurry contained in the pod 20 is heated by a planar heating element (film heater) using stainless steel as a heating resistance element, the heat generated in the planar heating element is transmitted to the slurry through the pod 20 that contains the slurry. In other words, the heat generated in the planar heating element is transmitted to the pod 20 and the slurry, causing a relatively great heat transmission loss. In contrast, the present embodiment uses an IH (induction heating) method as a method for heating the slurry as mentioned above. According to the IH method, the bottom wall 24 of the pod 20 per se generates heat, and the heat of the bottom wall 24 is transmitted to the slurry. Since the heat generated in the bottom wall 24 is transmitted directly to the slurry, the loss caused by heat transmission can be reduced, as compared to when the slurry is heated by the planar heating element.

[0017] When the bottom wall 24 is inductively heated by the induction coil 15, and the slurry in the pod 20 is then atomized, the solid (flavor source) contained in the slurry possibly escapes from the pod 20 to reach the mouthpiece 16. The present embodiment therefore provides a porous structure 26 to the pod 20 to close at least a part of the opening of the side wall 22. The porous structure 26 may be, for example, a filter, a metal mesh or any porous structure that allows gas and aerosol to pass therethrough. The porous structure 26 is preferably a filter. For example, an acetate filter may be used as the porous structure 26. The filter allows gas and aerosol to pass therethrough and yet at the same time inhibits a liquid from passing therethrough. This prevents the slurry from leaking outside the pod 20 after the seal member 28 of the pod 20 is broken as mentioned below. According to the present embodiment, the porous structure 26 is so configured as to allow the aerosol generated inside the pod 20 to flow outside the pod 20 and at the same time inhibit the slurry in the pod 20 from flowing outside the pod 20 when the slurry in the pod 20 is atomized.

[0018] The heating of the side wall 22 of the pod 20 or the utilization of the planar heating element, a coil heater or the like facilitates heat dispersion throughout the slurry. The heat then might be transmitted to the porous structure 26 to decrease atomization efficiency or melt the porous structure 26. In the present embodiment, however, since the induction coil 15 is arranged to face the bottom wall 24 to inductively heat the bottom wall 24, the heat of the bottom wall 24 is less likely to be transmitted to the porous structure 26, which prevents the decrease of atomization efficiency or the melting of the porous

structure 26.

[0019] As in the figure, at least a part of a surface of the porous structure 26 which faces the bottom wall of the pod 20 preferably includes a convex surface 26a formed into a convex shape protruding toward the bottom wall 24 of the pod 20. The induction heating of the bottom wall 24 causes temperature difference between the slurry close to the bottom wall 24 in the pod 20 and the slurry close to the porous structure 26 in the pod 20, generating a convection flow of the slurry. Since the porous structure 26 includes the convex surface 26a, the slurry that flows from down to up in the pod 20 contacts the convex surface 26a to be guided in right and left directions. This accelerates the convection of the slurry. According to the present embodiment, therefore, even if the slurry is decreased in amount with the atomization of the slurry, the temperature of the entire slurry is homogenized by the convection of the slurry. It is then possible to maintain a ratio between amount of the aerosol generated from the aerosol source and amount of the aerosol generated from the flavor source. Consequently, smoke flavor is maintained unchanged.

[0020] As in the figure, the mouthpiece 16 is connected to one end portion of the housing 11 so as to close the cavity 11a of the housing 11. The mouthpiece 16 includes an air inlet channel 16a connecting the outside of the mouthpiece 16 and the cavity 11a of the housing 11, and an air outlet channel 16b connecting the cavity 11a and the inside of a user's mouth. When the user inhales air from the air outlet channel 16b, the air that flows from the air inlet channel 16a into the cavity 11a passes through the porous structure 26 and reaches the inside of the user's mouth together with the aerosol generated from the pod 20.

[0021] The mouthpiece 16 may include an air channel 16c instead of the air inlet channel 16a and the air outlet channel 16b. The air channel 16c is in communication with an interior space, not shown, of the mouthpiece 16. In this case, the aerosol generated from the pod 20 moves to the interior space of the mouthpiece 16, and outside air reaches the inside of the user's mouth while absorbing the aerosol through the air channel 16c. The air channel 16c may be a three-pronged channel extended from a mouthpiece end portion of the mouthpiece 16 to the cavity 11a of the housing 11 and stretching to a side portion of the mouthpiece 16. An air inlet portion of the air channel 16c may be provided to a connection region between the mouthpiece 16 and the housing 11. More specifically, for example, the air inlet portion of the air channel 16c may be formed by providing a groove to the mouthpiece 16 and connecting the housing 11 and the mouthpiece 16. By so doing, the air that enters from the air inlet portion of the air channel 16c can pass through a surface of the pod 20 and flow out of the mouthpiece 16 together with the aerosol generated from the pod 20.

[0022] The insulating material 30 is arranged in the housing 11 so as to at least partially surround the side wall 22 of the pod 20 that is placed in the cavity 11a of the housing 11. The insulating material 30 of the present embodiment includes a first tube 30a, a second tube 30b, an upper end portion 30c, and a lower end portion 30d. The second tube 30b is arranged on an outer periphery side of the first tube 30a. The upper end portion 30c couples an upper end of the first tube 30a and an upper end of the second tube 30b. The lower end portion 30d couples a lower end of the first tube 30a and a lower end of the second tube 30b. The first tube 30a, the second tube 30b, the upper end portion 30c, and the lower end portion 30d define an interior space 31 that is tightly sealed by the insulting material 30. The interior space 31, for example, may be evacuated, which makes the insulating material 30 function as a vacuum insulating material. For example, the interior space 31 may be filled with insulating material such as aerogel.

[0023] At least the first tube 30a and the second tube 30b of the insulating material 30 are preferably made of SUS. The first tube 30a or the second tube 30b thus absorbs the electromagnetic wave generated by the induction coil 15. According to the present embodiment, the entire insulating material 30 is made of SUS. The first tube 30a and the second tube 30b of the insulating material 30 are preferably arranged to at least partially surround the induction coil 15. Due to the first tube 30a or the second tube 30b, it is possible to absorb more of the electromagnetic wave that flows from the induction coil 15 toward the outside of the housing. The insulating material 30 is therefore preferably longer in a direction thoroughly surrounding the side of the pod 20 and of the induction coil 15, that is, in a device longitudinal length of the insulating material 30 than a longitudinal length from an upper end to a lower end of a region in which the pod 20 and the induction coil 15 are arranged.

[0024] The flavor inhalator 10 may include a heat releasing member 34 that is in contact with the side wall 22 of the pod 20 placed in the cavity 11a of the housing 11. In an example shown in Fig. 1, the heat releasing member 34 is a fin extending in the longitudinal direction. The fin is arranged on an inner wall of the housing 11 which defines the cavity 11a. The heat releasing member 34 is preferably in contact with the side wall 22 of the pod 20 in the vicinity of an upper end portion of the side wall 22 (in the vicinity of the porous structure 26). This prevents an increase in temperature in the vicinity of the upper end portion of the pod 20, prevents the melting of the porous structure 26, and prevents the melting of the adhesive agent for adhesion between the pod 20 and the seal member 28 in the case where the seal member 28 is provided at the opening of the pod 20 as discussed below. The heat releasing member 34 may have any shape as long as the heat releasing member 34 contacts the side wall 22 of the pod 20. The heat releasing member 34 may be, for example, a ring-like fin that extends in a circumferential direction of the inner wall of the housing 11 which defines the cavity 11a. The heat releasing member 34 is preferably made of metal.

[0025] According to the present embodiment, the heat releasing member 34 is provided to the housing 11. Alternatively, a heat releasing member may be provided to the pod 20. Fig. 2 is a top view of the pod 20 as an example which includes heat releasing members on the side wall 22. Fig. 3 is a side view of the pod 20 as another example which includes a heat releasing member on the side wall 22. According to the example shown in Fig. 2, the pod 20 includes four fin-like heat releasing members 27 extending in an axial direction of the side wall 22 (vertical direction in Fig. 1). According to the example shown in Fig. 3, the pod 20 includes a ring-like heat releasing member 27 extending in a circumferential direction of the side wall 22. In a case where the heat releasing member 27 is provided in an outer peripheral surface of the side wall 22 as shown in Figs. 2 and 3, the pod 20 is so designed that the heat releasing member 27 provided to the side wall 22 of the pod 20 contacts the inner wall of the housing 11 which defines the cavity 11a when the pod 20 is placed in the cavity 11a. In a case where the pod 20 is provided with the fin-like heat releasing members 27 extending in the axial direction of the side wall 22 as shown in Fig. 2, the housing 11 is provided with grooves for the respective heat releasing members 27 so that the heat releasing members 27 may be guided by the grooves. This makes it possible to position the pod 20 and the housing 11 with accuracy and improve the stability of the atomizing action. The heat releasing members 27 shown in Figs. 2 and 3 are preferably made of metal.

[0026] The pod 20 of the present embodiment contains the slurry having fluidity. To prevent a leakage of the slurry stored in the pod 20, the pod 20 preferably includes the seal member 28 that seals the opening of the side wall 22 as shown in Fig. 2. More specifically, the seal member 28 is bonded, for example, with resin adhesive to the end portion of the side wall 22 which is provided with the porous structure 26, to thereby seal the opening of the pod 20. According to the example shown in Fig. 2, the entire seal member 28 may be metallic foil 28a, such as aluminum foil.

[0027] Fig. 4 shows a state in which the seal member 28 of the pod 20 shown in Fig. 2 is broken. In the case where the seal member 28 made of the metallic foil 28a is provided on an upper surface of the pod 20 as shown in Fig. 2, the seal member 28 needs to be broken before the pod 20 is used. In a case where the pod 20 of Fig. 2 is used in the flavor inhalator 10 of Fig. 1, therefore, the mouthpiece 16 is provided with a protrusion, not shown, and the mouthpiece 16 is engaged with the housing 11 whereby the protrusion breaks a part of the seal member 28.

[0028] Fig. 5 is a plan view of the pod 20 as still another example. Fig. 6 is a plan view of the pod 20 as still another example. The seal member 28 of the pod 20 shown in Fig. 5 is made of film 28b in a substantially center portion thereof and the metallic foil 28a, such as aluminum foil, in remaining portions thereof. The seal member 28 of the pod 20 shown in Fig. 6 is entirely made of film 28b. The film 28b shown in Figs. 5 and 6 is heated by the heat transmitted to the side wall 22 through the bottom wall 24 of the pod 20 that is inductively heated by the induction coil 15 and then at least partially broken. It is not preferable that the film 28b shown in Figs. 5 and 6 be made of material that is melted by being heated and forms liquid droplets. This is because the melted film possibly drips onto the slurry and affects the smoke flavor. For this reason, the film 28b shown in Figs. 5 and 6 is heat-shrinkable film and may be made of PP (polypropylene), PET (polyethylene terephthalate), gelatin or another material such as polysaccharide. The film 28b preferably shrinks from a center portion of the seal member 28 toward an outer peripheral portion of the seal member 28. The film 28b therefore preferably has smaller film thickness in the center portion than in the outer peripheral portion. The pod 20 shown in Fig. 1 may also be provided with the seal member 28 shown in Figs. 2, 4, 5 and 6.

[0029] According to the present embodiment, the pod 20 and the mouthpiece 16 are separate members. If the film 28b is used as the seal member 28 as discussed above, however, the film 28b is broken by the heat of the pod 20. In this case, it is not necessary to break the seal member 28 using the mouthpiece 16, so that the pod 20 and the mouthpiece 16 may be an integrated member. The seal member 28 may be extended to a side surface of the porous structure 26 to be bonded to the side surface of the porous structure 26. In such a case, a bonded portion can be melted by the heat from the bottom wall 24 that is inductively heated by the induction coil 15 to be turned into a channel that allows air from the outside of the flavor inhaler 10 to pass through the side surface of the porous structure 26.

[0030] The embodiments of the invention which have been discussed above are not intended to limit the invention. The invention may be modified in various ways within the scope of claims and technical ideas described in the description and drawings. Any shape and material that provide the operation and advantageous effects of the invention of the present application are within the scope of technical ideas of the invention even if they are not explicitly mentioned in the description and the drawings.

The following are several modes disclosed in this description.

[0031] A first mode provides a cartridge for a flavor inhaler. The cartridge includes a container that accommodates at least a flavor source. The container includes a cylindrical side wall, a bottom wall made of conductive material and provided to a first end of the side wall, and a porous structure arranged to close at least a part of an opening of a second end of the side wall.

[0032] In a second mode according to the first mode, the container accommodates slurry containing the flavor source.

[0033] In a third mode according to the first or second

mode, at least a part of a surface of the porous structure which faces the bottom wall of the container is formed into a convex shape protruding toward the bottom wall of the container.

[0034] In a fourth mode according to any one of the first to third modes, the porous structure is a filter.

[0035] In a fifth mode according to any one of the first to fourth modes, the cartridge includes a seal member that seals the opening of the second end of the side wall.

[0036] In a sixth mode according to the fifth mode, the seal member is at least partially made of heat-shrinkable film.

[0037] In a seventh mode according to the sixth mode, the seal member is made of metallic foil and the heat-shrinkable film.

[0038] In an eighth mode according to the sixth or seventh mode, the heat-shrinkable film has smaller thickness in a center portion than in an outer peripheral portion.

[0039] In a ninth mode according to any one of the first to eighth modes, the container includes a heat releasing member fixed to an outer peripheral surface of the container.

[0040] In a 10th mode according to the ninth mode, the heat releasing member includes a fin that is provided to an outer peripheral surface of the side wall of the container and extends along an axial direction of the side wall having a cylindrical shape.

[0041] In an 11th mode according to the first to 10th modes, the bottom wall has a flat outer surface.

[0042] In a 12th mode according to the first to 11th modes, the container is made of stainless steel.

[0043] In a 13th mode according to the first to 12th modes, the bottom wall is a susceptor.

[0044] In a 14th mode according to any one of the first to 13th modes, the side wall is made of conductive material.

[0045] In a 15th mode according to any one of the first to 14th modes, the porous structure is so configured that aerosol generated from the slurry is allowed to pass through the porous structure.

[0046] A 16th mode provides a flavor inhaler configured to heat the slurry included in the cartridge according to any one of the first to 15th modes. The flavor inhaler includes an induction coil that is arranged to face the bottom wall of the container accommodated in the housing and configured to inductively heat the bottom wall of the container.

REFERENCE SIGN LIST

[0047]

10	Flavor inhaler
11	Housing
11a	Cavity
13	Controller
14	Electromagnetic shield
15	Induction coil
16	Mouthpiece
20	Container
22	Side wall
24	Bottom wall
26	Porous structure
26a	Convex surface
27	Heat releasing member
28	Seal member
28a	Metallic foil
28b	Film
30	Insulating material
30a	First tube
30b	Second tube
31	Interior space
34	Heat releasing member

Claims

1. A cartridge for a flavor inhaler,

the cartridge including a container that accommodates at least a flavor source,
the container including:

a cylindrical side wall;
a bottom wall made of conductive material and provided to a first end of the side wall, and
a porous structure arranged to close at least a part of an opening of a second end of the side wall.

2. The cartridge according to Claim 1, wherein the container accommodates slurry containing the flavor source.

3. The cartridge according to Claim 1 or 2, wherein at least a part of a surface of the porous structure which faces the bottom wall of the container is formed into a convex shape protruding toward the bottom wall of the container.

4. The cartridge according to any one of Claims 1 to 3, wherein the porous structure is a filter.

5. The cartridge according to any one of Claims 1 to 4, wherein the cartridge includes a seal member that seals the opening of the second end of the side wall.

6. The cartridge according to Claim 5, wherein the seal member is at least partially made of heat-shrinkable film.

7. The cartridge according to Claim 6, wherein the seal member is made of metallic foil and the heat-shrinkable film.

8. The cartridge according to Claim 6 or 7, wherein the heat-shrinkable film has smaller thickness in a center portion than in an outer peripheral portion.

9. The cartridge according to any one of Claims 1 to 8, wherein the container includes a heat releasing member fixed to an outer peripheral surface of the container.

10. The cartridge according to Claim 9, wherein the heat releasing member includes a fin that is provided to an outer peripheral surface of the side wall of the container and extends along an axial direction of the side wall having a cylindrical shape.

11. The cartridge according to any one of Claims 1 to 10, wherein the bottom wall has a flat outer surface.

12. The cartridge according to any one of Claims 1 to 11, wherein the container is made of stainless steel.

13. The cartridge according to any one of Claims 1 to 12, wherein the bottom wall is a susceptor.

14. The cartridge according to any one of Claims 1 to 13, wherein the side wall is made of conductive material.

15. The cartridge according to any one of Claims 1 to 14, wherein the porous structure is so configured that aerosol generated from the slurry is allowed to pass through the porous structure.

16. A flavor inhaler configured to heat the slurry included in the cartridge according to any one of Claims 1 to 15,
the flavor inhaler including:

a housing that accommodates the container, and
an induction coil that is arranged to face the bottom wall of the container accommodated in the housing and configured to inductively heat the bottom wall of the container.

Fig. 1

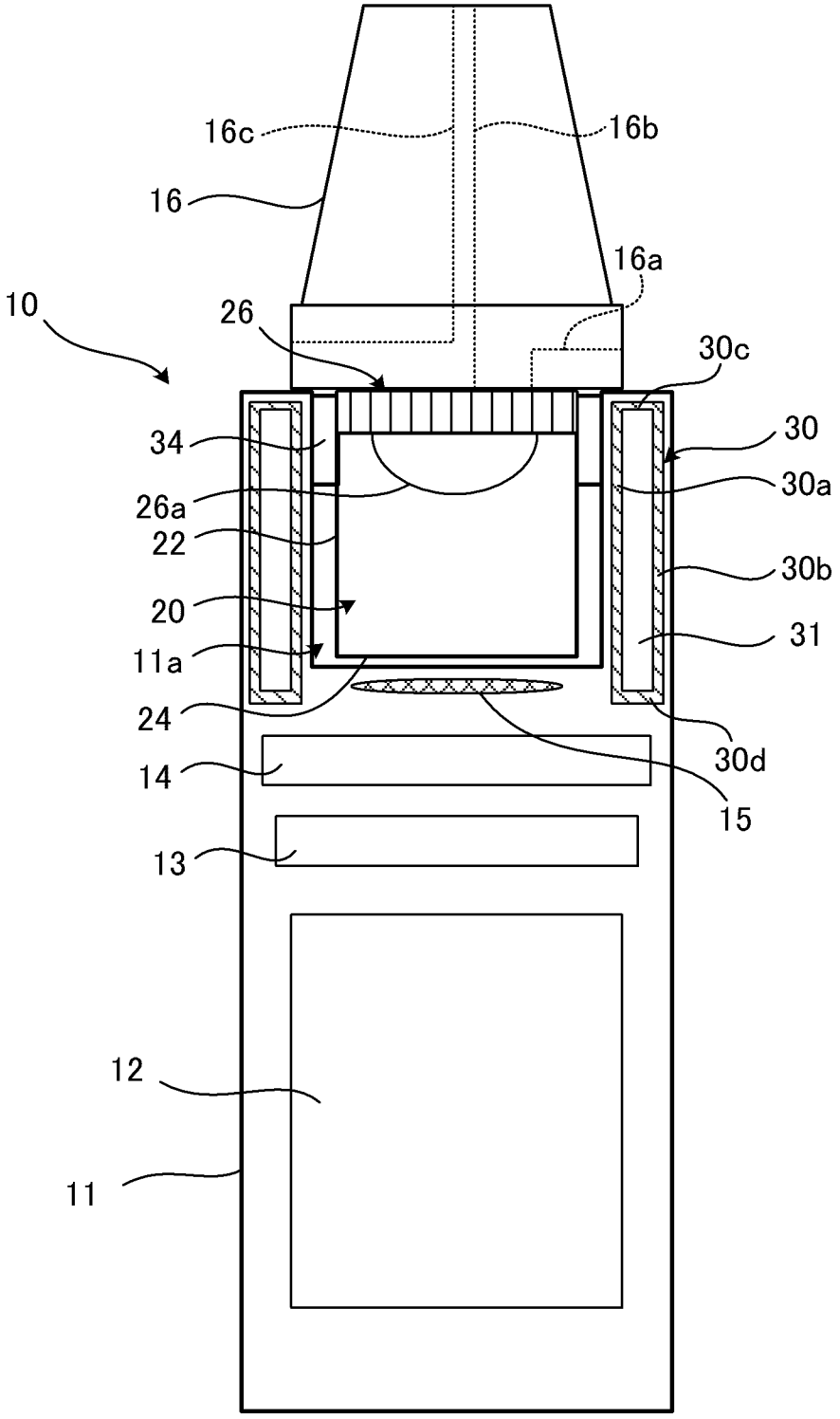

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Fig. 2

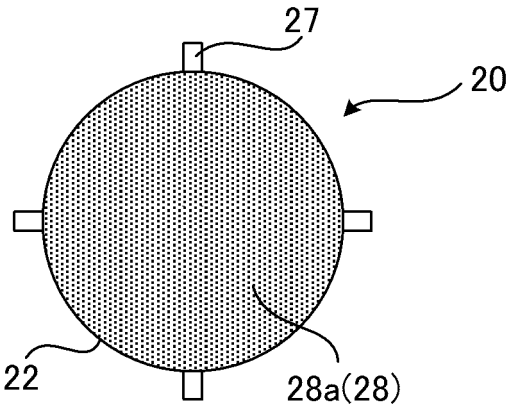


Fig. 3

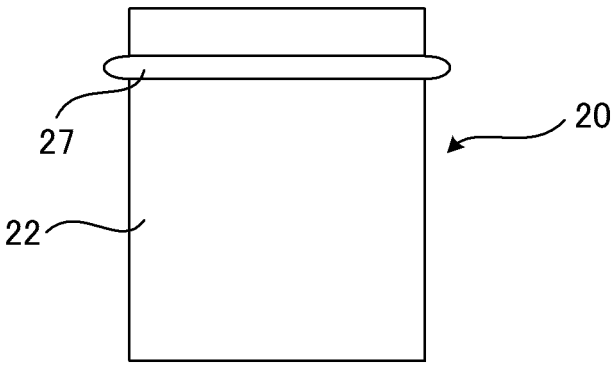


Fig. 4

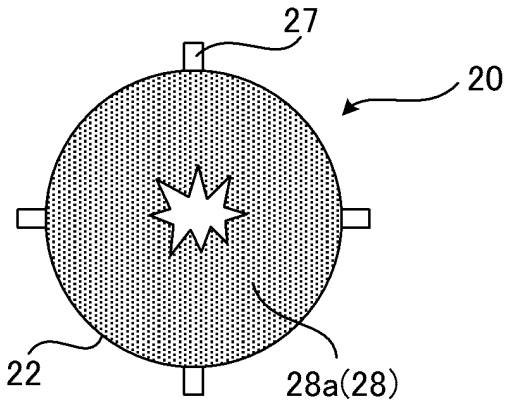


Fig. 5

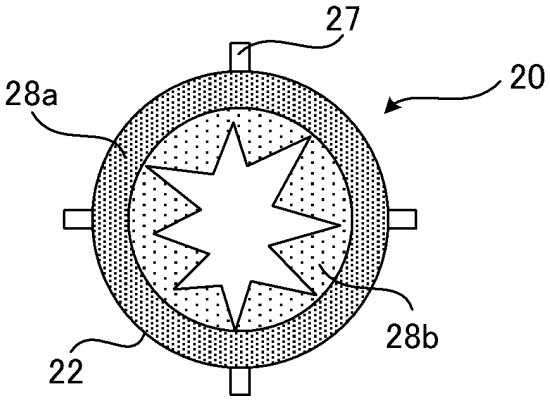
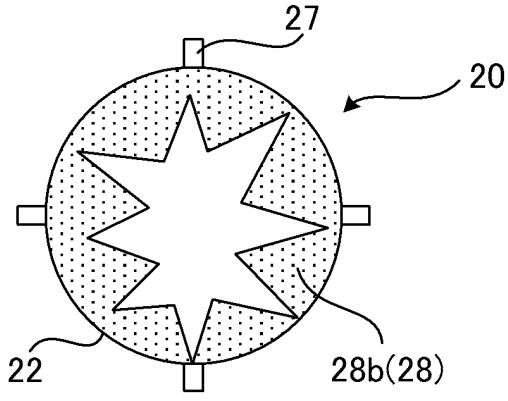


Fig. 6



INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2019/002828

A. CLASSIFICATION OF SUBJECT MATTER
Int. Cl. A24F47/00(2006.01)i, A61M15/06(2006.01)i

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)
Int. Cl. A24F47/00, A61M15/06

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 1971-2019
Registered utility model specifications of Japan 1996-2019
Published registered utility model applications of Japan 1994-2019

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.
Y A	CN 104382238 A (SHENZHEN JIAPIN JIANYI TECHNOLOGY CO., LTD.) 04 March 2015, paragraphs [0049], [0057], [0058], fig. 3 (Family: none)	1-5, 9, 11-16 6-8, 10
Y	JP 2018-535660 A (PHILIP MORRIS PRODUCTS S.A.) 06 December 2018, paragraphs [0073]-[0079] & US 2018/0352858 A1, paragraphs [0074]-[0080] & WO 2017/068095 A1 & EP 3364793 A1 & CN 108135278 A & KR 10-2018-0071322 A	1-5, 9, 11-16
Y	US 2018/0192701 A1 (CHARLES C, Stoner) 12 July 2018, paragraph [0052] (Family: none)	1-5, 9, 11-16

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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19.04.2019	07.05.2019
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INTERNATIONAL SEARCH REPORT

International application No.
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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 2018-523986 A (PHILIP MORRIS PRODUCTS S.A.) 30 August 2018, paragraphs [0060]-[0067], [0112]-[0115], fig. 1 & US 2018/0297048 A1, paragraphs [0060]-[0067], [0121]-[0124], fig. 1 & WO 2017/001352 A2 & EP 3313216 A2 & CN 107734982 A & KR 10-2018-0021689 A	1-5, 9, 11-16
Y	JP 2018-536398 A (PHILIP MORRIS PRODUCTS S.A.) 13 December 2018, paragraphs [0030], [0031] & US 2018/0310623 A1, paragraphs [0030], [0031] & WO 2017/068101 A1 & EP 3364796 A1 & CN 108135263 A & KR 10-2018-0071321 A	2-5, 9, 11-16
Y	JP 03-114473 A (R. J. REYNOLDS TOBACCO COMPANY) 15 May 1991, page 7, lower right column, lines 4-7 & US 4714082 A, column 10, lines 19-35	9, 11-16
A	JP 2018-528767 A (BRITISH AMERICAN TOBACCO (INVESTMENTS) LIMITED) 04 October 2018, & US 2017/0055574 A1 & WO 2017/036958 A2 & EP 3344080 A2 & CN 107920598 A & KR 10-2018-0036763 A	1-16
A	US 2010/0024834 A1 (OGLESBY & BUTLER RESEARCH & DEVELOPMENT LIMITED) 04 February 2010, & WO 2008/029381 A2 & EP 2068985 A2	1-16

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- WO 2017068095 A **[0003]**