



US 20220295882A1

(19) **United States**

(12) **Patent Application Publication**
WATANABE

(10) **Pub. No.: US 2022/0295882 A1**

(43) **Pub. Date: Sep. 22, 2022**

(54) **AROMA CARTRIDGE**

Publication Classification

(71) Applicant: **Future Technology CO., LTD.**,
Kagoshima (JP)

(51) **Int. Cl.**
A24F 40/42 (2006.01)

(72) Inventor: **Ryuji WATANABE**, Tokyo (JP)

(52) **U.S. Cl.**
CPC *A24F 40/42* (2020.01)

(21) Appl. No.: **17/434,572**

(57) **ABSTRACT**

(22) PCT Filed: **Apr. 3, 2020**

(86) PCT No.: **PCT/JP2020/015398**

§ 371 (c)(1),

(2) Date: **Aug. 27, 2021**

(30) **Foreign Application Priority Data**

Dec. 9, 2019 (JP) 2019-222441

An object is to provide an aroma cartridge for an aromatic device, which allows comfortable smoking and allows an aromatic source to fully generate aroma in a fully enjoyable manner. The aroma cartridge, which is attachable to the aromatic device, includes an aromatic generator **15** having an aromatic source **15a** and configured to generate an aerosol containing an aromatic component; and a cover **12** having plural cover holes **12c** that are permeable to air and impermeable to the aromatic source **15a**.

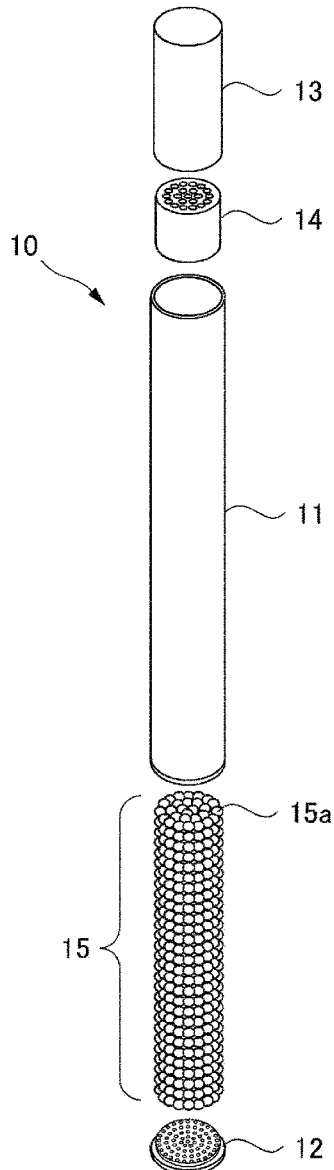


FIG.1

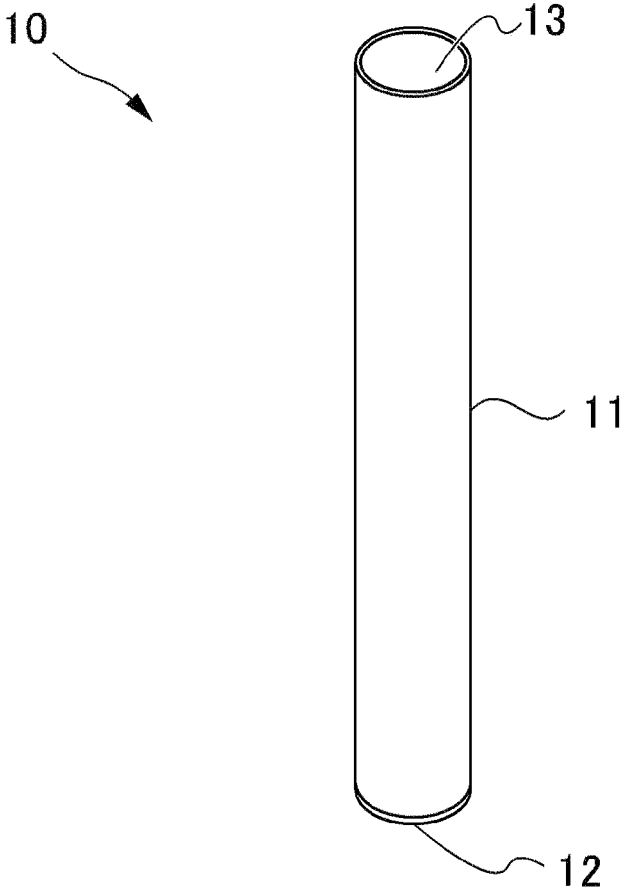


FIG.2

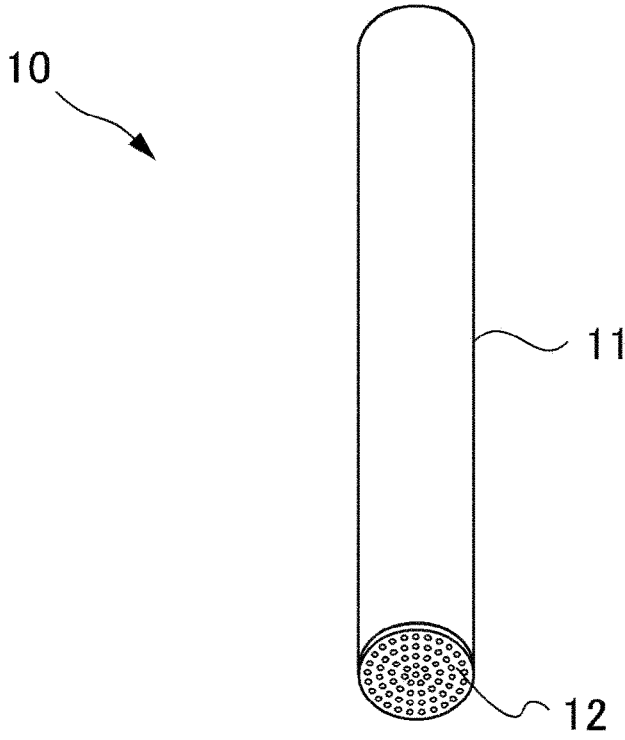


FIG.3

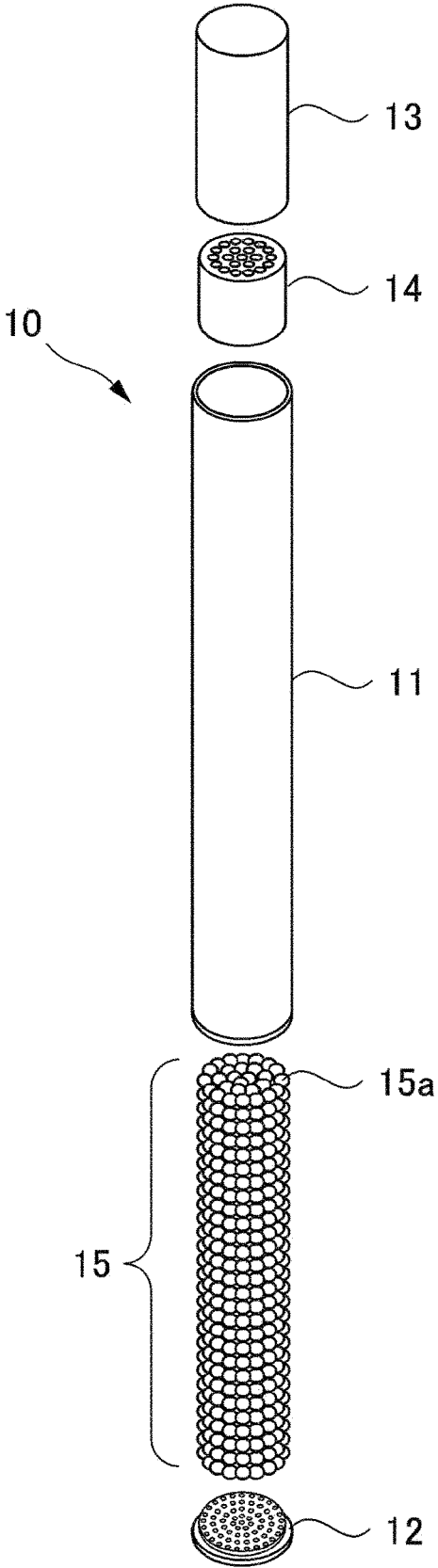


FIG.4

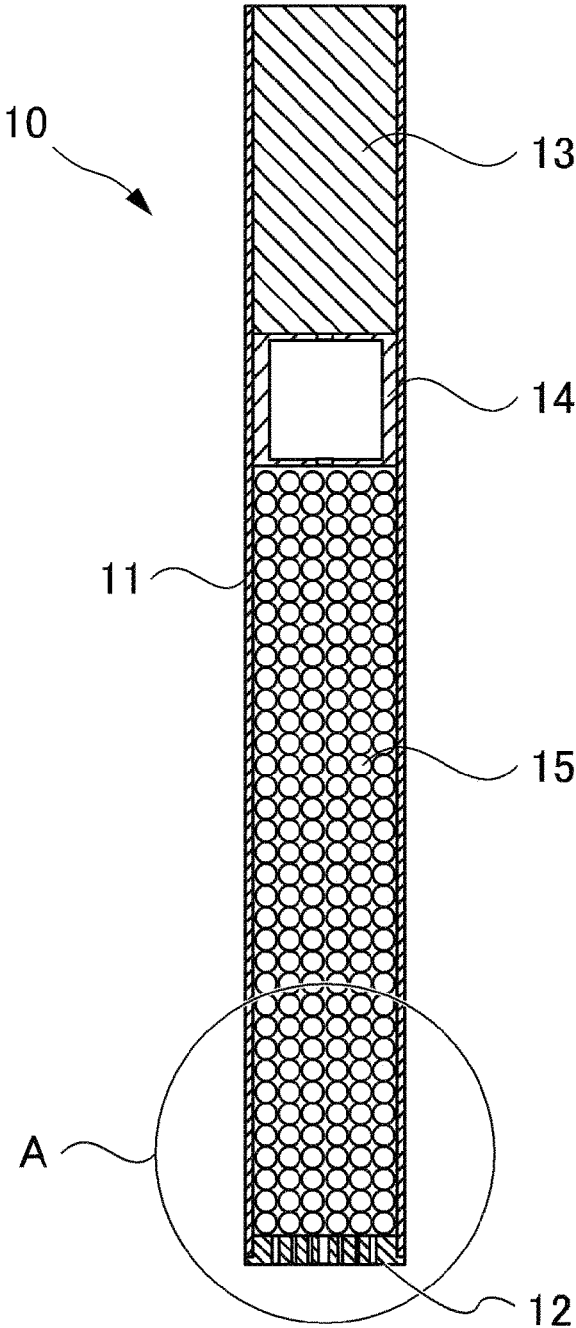


FIG.5

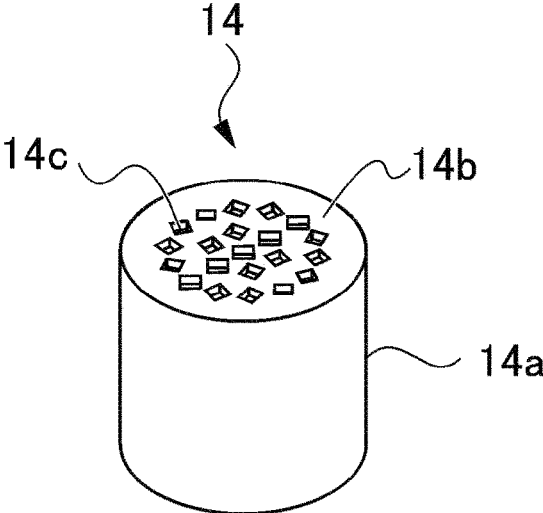


FIG.6

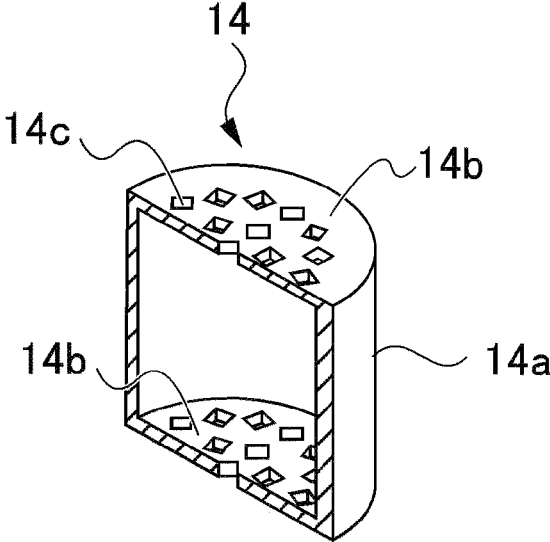


FIG.7

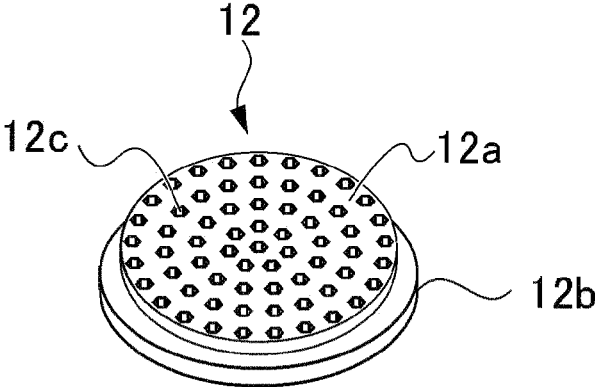


FIG.8

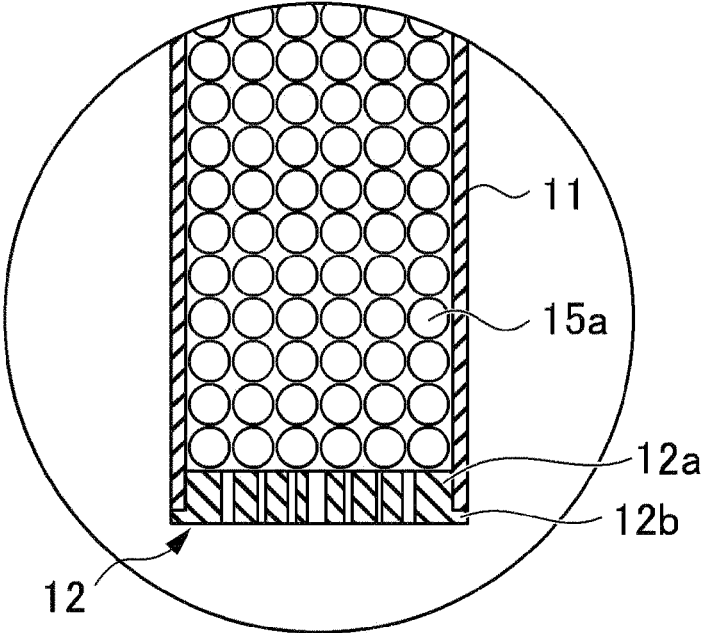


FIG.9

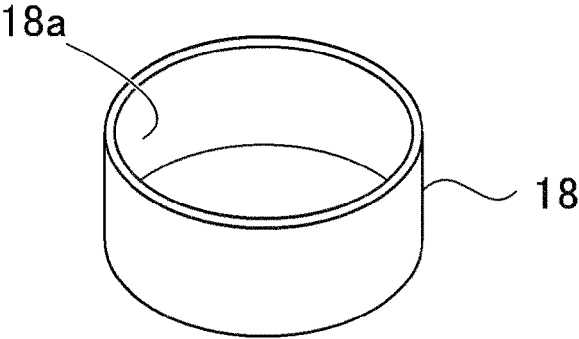


FIG.10

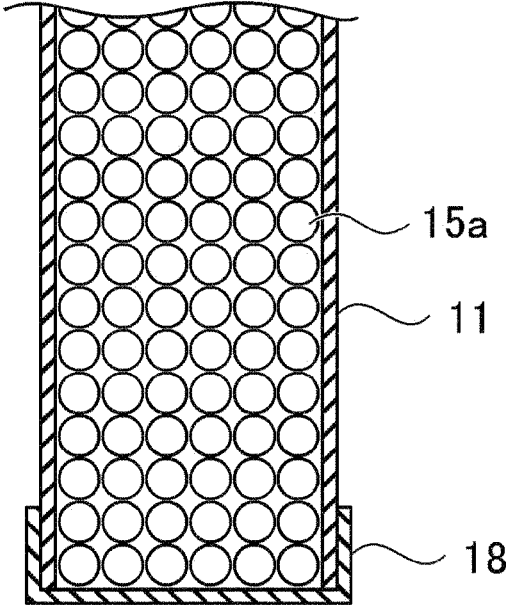


FIG. 11

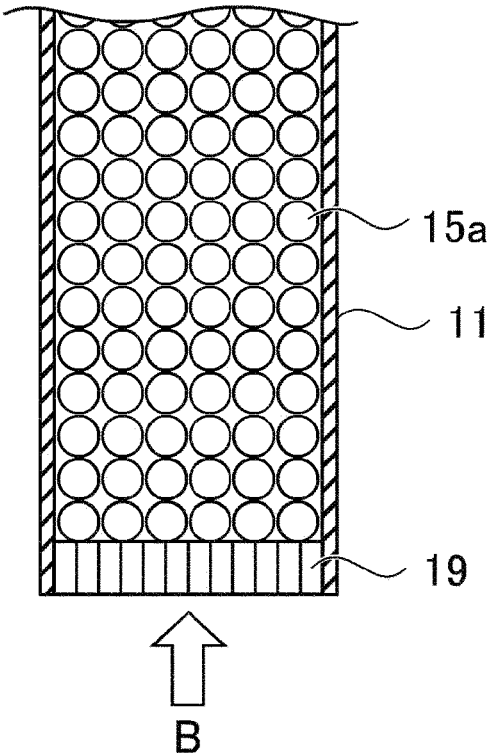


FIG.12

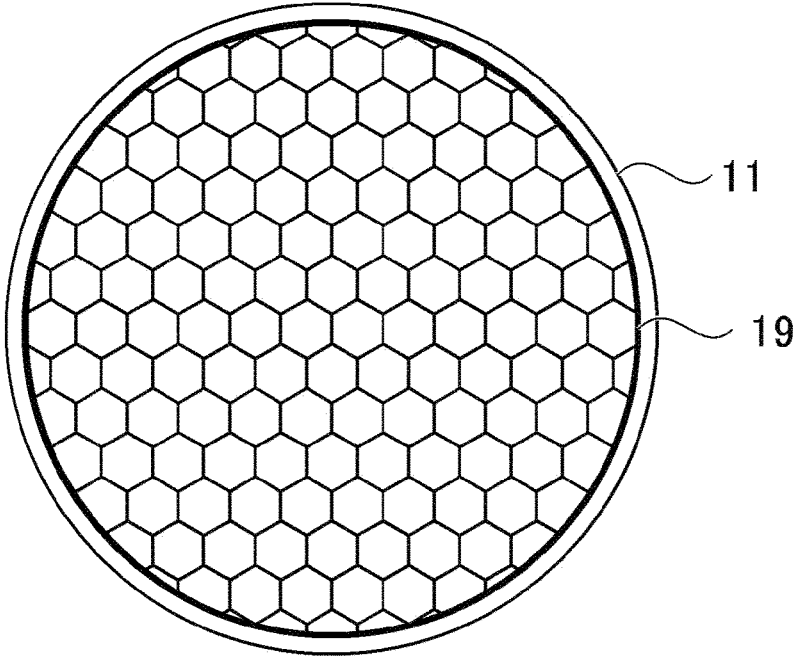


FIG.13

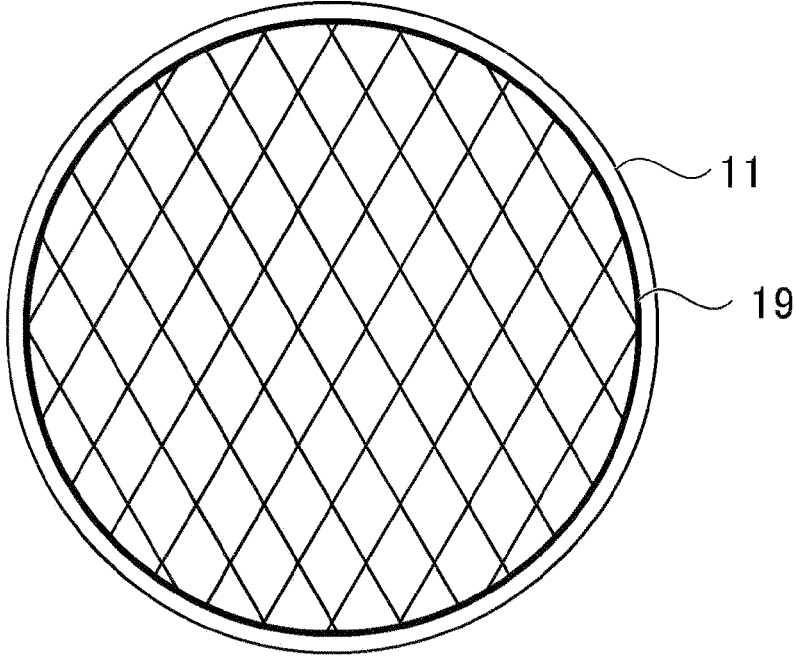


FIG.14

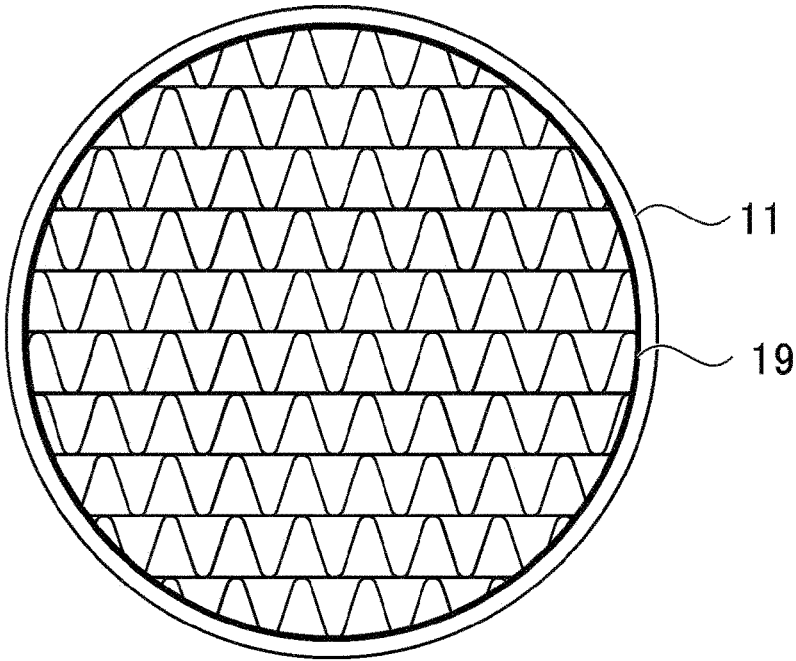


FIG.15

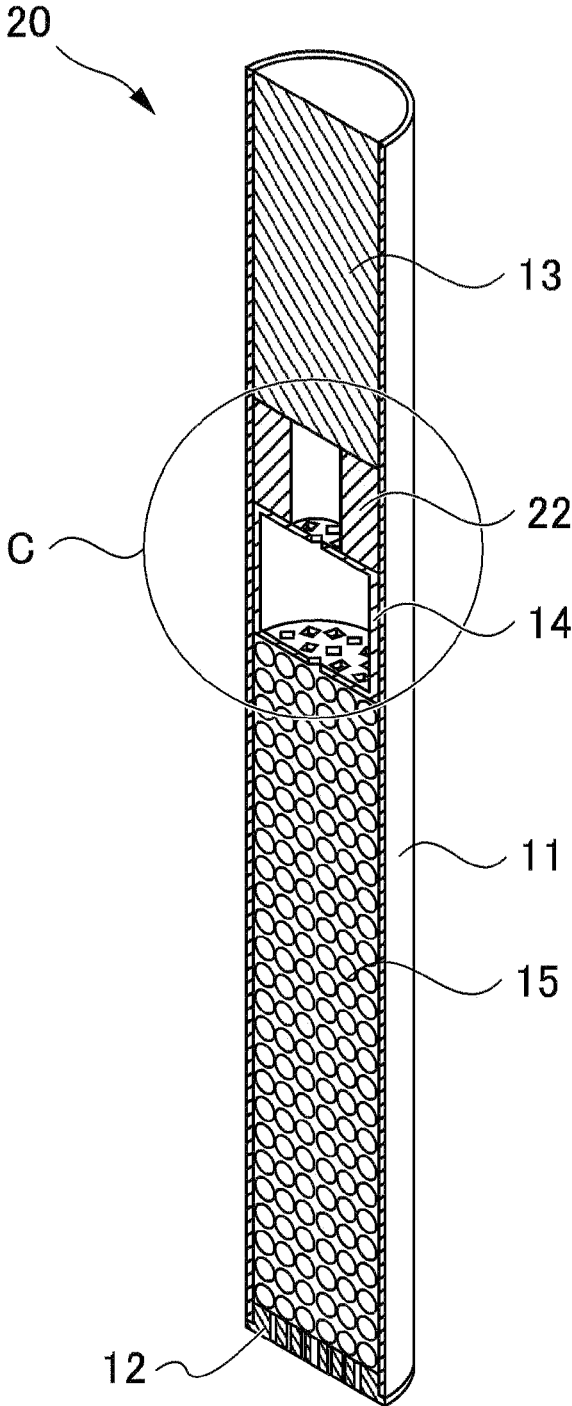


FIG.16

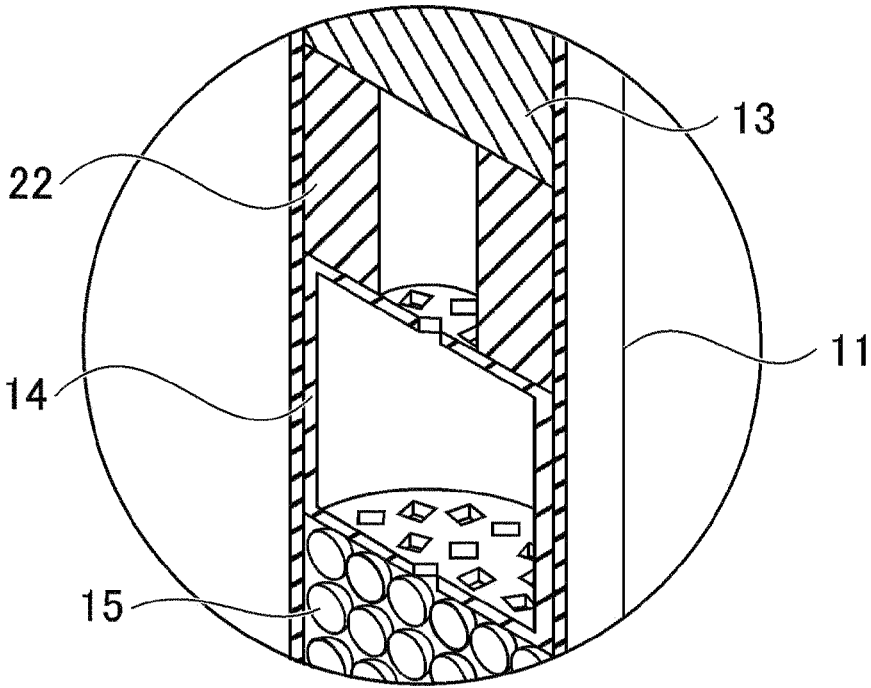


FIG.17

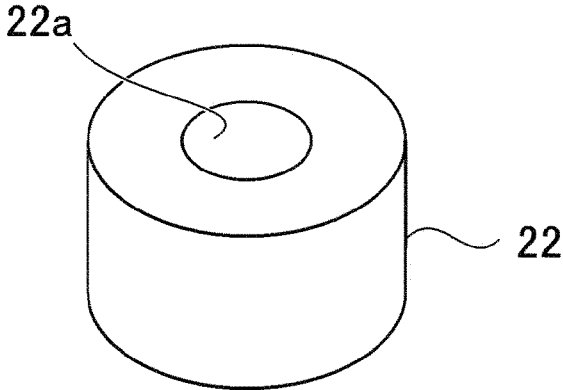
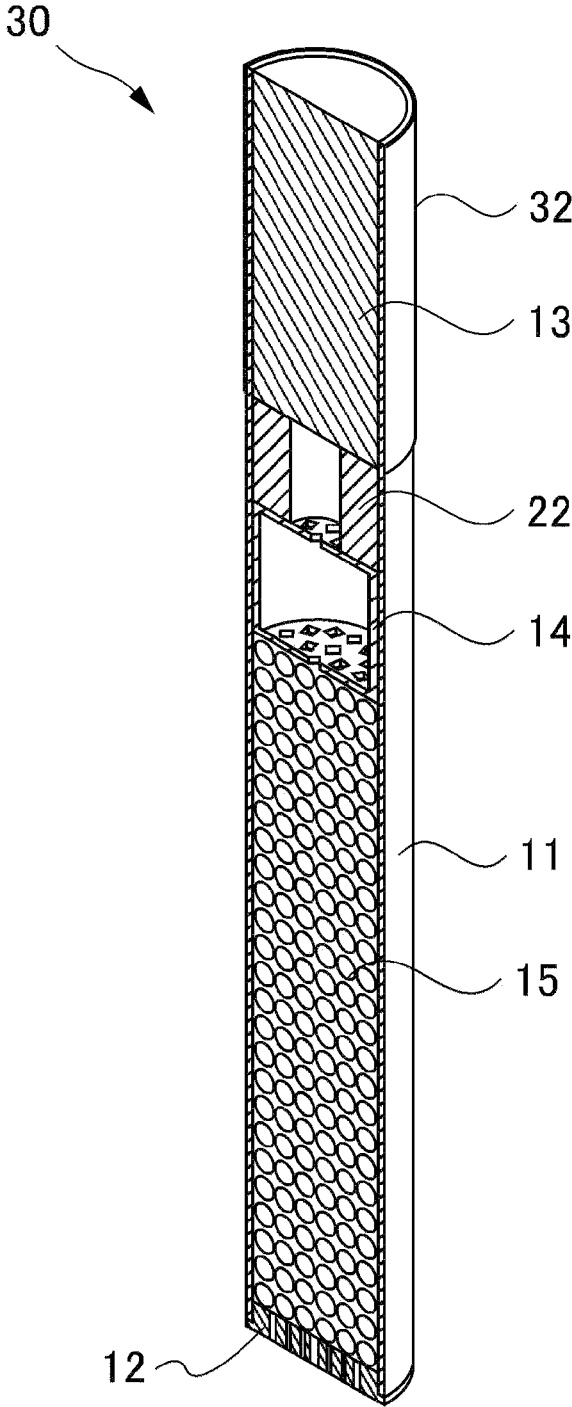


FIG.18



AROMA CARTRIDGE

TECHNICAL FIELD

[0001] The present invention relates to an aroma cartridge for an aromatic device.

BACKGROUND ART

[0002] In recent years, electronic cigarettes have been widely used. In an electronic cigarette, a cartridge containing tobacco-derived components is electrically heated to generate an aerosol, which is to be inhaled. Patent Document 1 discloses an electronic cigarette that includes a smoking article 10 having an aerosol-forming substrate 20 in which a heating element 120 is inserted to heat the aerosol-forming substrate 20 so that an aerosol containing tobacco components is generated. Many of aerosol-forming substrates in such smoking articles include sheets of a tobacco material packed at a high density.

[0003] Patent Document 1: Japanese Unexamined Patent Application (Translation of PCT Application), Publication No. 2015-519915

DISCLOSURE OF THE INVENTION

Problems to be Solved by the Invention

[0004] In a conventional aerosol-forming substrate, sheets of an aerosol-forming material are packed at a high density with less spaces between the material sheets. Therefore, smoking with such an electronic cigarette requires a relatively strong inhalation force. Such an electronic cigarette also has a problem in which the aerosol-forming material can be difficult to heat uniformly so that all the odors possible from the material are not fully enjoyable.

[0005] It is an object of the present invention to provide an aroma (perfume) cartridge for an aromatic device, which allows comfortable smoking and allows an aromatic source to fully generate aromatic in a fully enjoyable manner.

[0006] As used herein, the term “aroma cartridge” refers to an article corresponding to the “smoking article” disclosed in Patent Document 1, in general, which may also be referred to as a “smoking cartridge”, an “electronic cigarette cartridge”, an “electronic cigarette interchangeable cartridge”, etc. This is because non-tobacco materials free of tobacco components may also be used as aromatic source materials. It should be noted that any material that can be used as an aromatic source material (corresponding to the aerosol-forming material mentioned above) is referred to as an “aromatic source” no matter whether it is a tobacco or non-tobacco material. The term “aromatic generator” refers to a part that contains the whole of the aromatic source loaded in the aroma cartridge and is configured to generate an “aerosol for aroma”, which corresponds to the “aerosol-forming substrate” mentioned above, in the aroma cartridge. The term “aromatic device” refers to a device that includes a heating element to heat the aromatic generator in the aroma cartridge, which corresponds to the “electronic cigarette” or “electronic cigarette product” mentioned above. This is also because non-tobacco materials free of tobacco components may also be used.

[0007] The term “aroma”, which means a “pleasant odor”, is intended to include an odor emitted from a material itself (fragrance), an odor in a space upon heating (aroma), an odor as an oral sensation upon inhalation (flavor), and so on.

In general, the term “smoking” often means inhaling the smoke of tobacco. As used herein, the term “smoking” simply mean “enjoying smoke”, “tasting smoke”, or “savoring smoke” in which smoke sources include not only tobacco but also non-tobacco materials. As used herein, the term “smoke” is intended to also include “something looking like smoke” or “smoke-like entity” such an aerosol or other droplets dispersed in the air.

Means for Solving the Problems

[0008] In order to achieve the above object, the present invention is directed to an aroma cartridge attachable to an aromatic device, the aroma cartridge including: an aromatic generator having an aromatic source and configured to generate an aerosol containing an aromatic component; and a cover having plural cover holes that are permeable to air and impermeable to the aromatic source.

Effects of the Invention

[0009] According to the present invention, the aromatic source may be made from a tobacco or non-tobacco material in a shape not like the conventional continuous sheet and thus may be in the form of granules between which many spaces can be established. This ensures a sufficient level of air permeability during smoking, which allows easy inhalation. In this regard, many spaces between the granules allow heat from a heating element of the aromatic device to be transmitted a relatively long distance by convection and radiation so that the aromatic source can be more uniformly heated to generate a sufficient amount of aroma in a fully enjoyable manner.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] FIG. 1 is a perspective view schematically showing an aroma cartridge according to Embodiment 1 of the present invention;

[0011] FIG. 2 is a perspective view schematically showing the aroma cartridge according to Embodiment 1 from another angle;

[0012] FIG. 3 is an exploded view schematically showing the aroma cartridge according to Embodiment 1;

[0013] FIG. 4 is a cross-sectional view schematically showing the aroma cartridge according to Embodiment 1;

[0014] FIG. 5 is a perspective view schematically showing a support member of the aroma cartridge according to Embodiment 1;

[0015] FIG. 6 is a perspective cross-sectional view schematically showing the support member of the aroma cartridge according to Embodiment 1;

[0016] FIG. 7 is a perspective view schematically showing a cover of the aroma cartridge according to Embodiment 1;

[0017] FIG. 8 is an enlarged view of the area A in FIG. 4;

[0018] FIG. 9 is a perspective view showing another example of the cover of the aroma cartridge;

[0019] FIG. 10 is a cross-sectional view showing an end portion of the aroma cartridge with the cover of FIG. 9 attached thereto;

[0020] FIG. 11 is a cross-sectional view illustrating a further example of the cover of the aroma cartridge;

[0021] FIG. 12 is an enlarged view in the direction B in FIG. 11;

[0022] FIG. 13 is a view of another example of the cover shown in FIG. 11;

[0023] FIG. 14 is a view showing a further example of the cover shown in FIG. 11;

[0024] FIG. 15 is a perspective cross-sectional view schematically showing an aroma cartridge according to Embodiment 2 of the present invention;

[0025] FIG. 16 is an enlarged view of the area C in FIG. 15;

[0026] FIG. 17 is a perspective view of a second filter in Embodiment 2; and

[0027] FIG. 18 is a perspective cross-sectional view schematically showing an aroma cartridge according to Embodiment 3 of the present invention.

PREFERRED MODE FOR CARRYING OUT THE INVENTION

[0028] Hereinafter, the present invention will be described with reference to embodiments.

Embodiment 1

[0029] FIG. 1 is a perspective view schematically showing an aroma cartridge 10 according to Embodiment 1 of the present invention. FIG. 2 is a perspective view schematically showing the aroma cartridge 10 according to Embodiment 1 from another angle. FIG. 3 is an exploded view schematically showing the aroma cartridge 10 according to Embodiment 1. FIG. 4 is a cross-sectional view schematically showing the aroma cartridge 10 according to Embodiment 1 of the present invention. The aroma cartridge is configured to generate an aerosol when attached to an aromatic device and heated by a heating element of the aromatic device.

[0030] As shown in FIGS. 1 to 4, the aroma cartridge 10 includes a casing member 11, a filter 13, a support member 14, an aromatic generator 15, and a cover 12. The filter 13, the support member 14, the aromatic generator 15, and the cover 12 are arranged in this order and surrounded by the casing member 11 to form the aroma cartridge 10 in a substantially cylindrical shape. As shown in FIG. 4, in the aroma cartridge 10, the top of the filter 13 is aligned with the upper end of the casing member 11, the bottom of the filter 13 is in contact with the upper end of the support member 14, the bottom of the support member 14 is in contact with the upper end of the aromatic generator 15, and the bottom of the aromatic generator 15 is in contact with the cover 12.

[0031] In this regard, the shape of the aroma cartridge 10 may not be geometrically cylindrical and may be substantially cylindrical when viewed as a whole. The columnar shape of the aroma cartridge 10 is not limited to a cylinder and may be any other columnar shape. Specifically, the aroma cartridge may have a columnar shape with a circular cross-section intersecting its longitudinal direction or with any other cross-section such as an elliptical, polygonal, semicircular, or semi-elliptical cross-section intersecting its longitudinal direction. Examples of polygonal shapes include rectangle, square, rhombus, hexagon, etc.

[0032] Herein, terms used to indicate the direction, position, site, or the like of an element, such as “upper”, “lower”, “left”, “right”, “top”, and “bottom”, as used above in “upper end” and “the top of”, are basically intended to indicate a relative direction, position, or other relationship between elements shown in the drawings and not intended to indicate an absolute position unless otherwise stated.

[0033] The aromatic generator 15 includes plural aromatic sources 15a and is configured to generate an aerosol con-

taining aromatic components. The aromatic sources 15a are granular. The aromatic sources 15a include a tobacco material or a non-tobacco material. As used herein, the term “tobacco material” refers to a material including tobacco leaf, tobacco stem, or the like. In this regard, the term “non-tobacco material” refers to a material that contains at least one of leaf, fruit, flower, root, stem, trunk, branch, and skin of a non-tobacco plant and contains no tobacco. Examples of the non-tobacco plant for use include gardenia fruits, kaffir lime leaves, Japanese ginger, mugwort, Japanese horseradish, ajowan seeds, anise, alfalfa, echinacea, shallot, estragon, everlasting flower, elder, allspice, orris root, oregano, orange peel, orange flower, orange leaf, cayenne chili pepper, German chamomile, Roman chamomile, cardamom, curry leaf, garlic, catnip, caraway, caraway seeds, Fragrant olive, cumin, cumin seeds, clove, green cardamom, green pepper, cornflower, saffron, cider, cinnamon, jasmine, juniper berry, jolokia, ginger, star anise, spearmint, smack, sage, savory, celery, celery seeds, turmeric (curcuma), thyme, tamarind, estragon, chervil (cerfeuil), chive, dill, dill seeds, tomato (dried tomato), tonka beans, dried coriander, nutmeg, hibiscus, habanero, jalapeno pepper, Birds Eye, basil, vanilla, cilantro (coriander), parsley, paprika, *Hyssopus officinalis*, Piment d’Espelette, pink pepper, foenum-graecum seeds, fennel, brown mustard, black cardamom, Black Cumin, black pepper, Vetiver, European Pennyroyal, peppermint (Japanese mint), horseradish, white pepper, white mustard, poppy seeds, *Boletus edulis*, marjoram, mustard seeds, Manigetto, Marigold, *Marrubium vulgare* flower, mace, Yarrow flower, Eucalyptus, lavender, licorice, lindane, Red Clover, red pepper, lemon grass, lemon verbena, lemon balm, lemon peel, rose (Rosa), rose buds (purple), rosehip, rose petals, rosemary, rose red, laurel (bay leaf), long pepper, sesame (raw sesame, roasted sesame), golden pepper, szechuan pepper (Sichuan pepper), Mitaka, zanthoxylum fruit, red pepper, and *Citrus junos* (Yuzu).

[0034] Some types of tea may also be used as non-tobacco materials. Different types of tea can be produced not only from different tea plants but also by different methods of processing the same plant. Examples of some types of tea include black tea, green tea, and other types of tea, such as *Angelica keiskei* tea, hydrangea tea, jiaogulan tea, aloe tea, ginkgo leaf tea, oolong tea, turmeric tea, *Quercus salicina* tea, Siberian ginseng tea, plantain tea, *Glechoma hederacea* tea, persimmon leaf tea, matricaria tea, chamomile tea, Nomame senna tea, Chinese quince tea, chrysanthemum flower tea, *Gymnema sylvestre* tea, guava tea, Chinese wolfberry tea, mulberry leaf tea, black soybean tea, *Geranium thunbergii* tea, brown rice tea, great burdock tea, comfrey tea, seaweed tea, cherry blossom tea, saffron tea, Shitake mushroom tea, Perilla tea, jasmine tea, ginger tea, *Equisetum arvense* tea, *Acorus gramineus* tea, *Swertia japonica* tea, buckwheat tea, *Aralia elata* tea, dandelion tea, Sweet tea, Houttuynia tea, gutta percha tea, sword bean tea, elder tea, *Ligustrum japonicum* tea, pearl barley tea, Habu tea, loquat leaf tea, Pu-erh tea, safflower tea, pine needle tea, mate tea, barley tea, *Acer maximowiczianum* tea, Mugwort tea, Eucalyptus tea, *Momordica grosvenori* tea, and Rooibos tea. These types of tea may also be made from used tea grounds. The use of tea grounds and so on allows reuse and efficient use of expensive tea materials.

[0035] The aromatic sources 15a may be produced from a powdered tobacco or non-tobacco material. The granules of

the aromatic sources **15a** may be substantially spherical. For example, the aromatic sources **15a** may be formed by mixing a powdered tobacco or non-tobacco material with glycerin or oil, kneading the mixture into substantially spherical granules, and drying the granules. As used herein, the term “substantially spherical” is intended to mean that the granules of the aromatic sources **15a** may be of a shape substantially close to a sphere since they are difficult to shape into true spheres and do not need to be shaped into true spheres in the manufacturing process. The granules of the aromatic sources **15a** may have an average diameter of 1 mm to 4 mm. The average diameter is preferably 1 mm to 2 mm. However, the shape of the granules of the aromatic sources **15a** is not limited to a substantially spherical shape. The aromatic sources **15a** may also be produced by first forming large blocks, drying the blocks, and then crushing the blocks into small granules.

[0036] FIG. 5 is a perspective view schematically showing a support member of the aroma cartridge according to Embodiment 1 of the present invention. FIG. 6 is a perspective cross-sectional view schematically showing the support member of the aroma cartridge according to Embodiment 1 of the present invention. As shown in the drawings, the support member **14** includes a cylindrical body **14a** and two circular plates **14b** provided at both ends of the cylindrical body. The two circular plates **14b** have plural support member holes **14c**. The support member holes **14c** may be polygonal, circular, or elliptical. Examples of polygonal shapes include rectangle, square, rhombus, and hexagon.

[0037] In the example shown in FIGS. 5 and 6, the support member holes **14c** are square holes. The support member holes **14c** may have such a size that they are impermeable to the granules of the aromatic sources **15a** but permeable to an aerosol produced when the aromatic sources **15a** are heated. The support member holes **14c** are made square or polygonal so that the spherical granules of the aromatic sources **15a** can be prevented from plugging the support member holes **14c**. As used herein, the term “impermeable” is intended to mean substantially not allowing something to pass through, which may mean that a relatively small number of granules may pass through in some cases, such as if the granules are crushed or made smaller due to manufacturing errors.

[0038] As shown in FIG. 4, the support member **14** is provided on a side of the aromatic generator **15** opposite to the cover **12**. The support member **14** supports the aromatic generator **15** to prevent the aromatic generator **15** from shifting toward the filter **13** in the aroma cartridge when a heating element of an aromatic device is inserted into the aromatic generator **15** and pushes the aromatic generator **15**. The support member **14** also serves as a spacer to separate the filter **13** from the aromatic generator **15**. The support member **14** also has the effect of cooling an aerosol by allowing it to pass through when it is produced by heating the aromatic generator **15**. Therefore, the support member holes **14c** may be at a density that allows the support member **14** to be sufficiently permeable to air. In addition, the support member **14** is made of a material that neither deforms due to the heat of the heated aromatic generator **15** and the heat of the produced aerosol nor produces toxic or harmful substances. For example, the support member **14** may include halogen-free, low-smoke, highly flame-retardant polyolefin.

[0039] It will be understood that the support member **14** shown in FIGS. 5 and 6 is merely one example of the support

member. The support member may be replaced with any other example that can function as described above. For example, the support member may be made of a porous material. In this case, the pores of the porous material serve as support member holes. The porous material may be, for example, a porous ceramic material.

[0040] FIG. 7 is a perspective view schematically showing a cover of the aroma cartridge according to Embodiment 1 of the present invention. As shown in FIG. 4, the cover **12** is provided at a cylindrical aromatic generator **15**-side end of the aroma cartridge **10**. The cover **12** has plural cover holes **12c** that are permeable to air and impermeable to the granules of the aromatic sources **15a**. As used herein, the term “impermeable” is intended to mean substantially not allowing something to pass through, which may mean that a relatively small number of granules may pass through in some cases, such as if the granules are crushed or made smaller due to manufacturing errors. The cover **12** can prevent the granules of the aromatic sources **15a** from leaking out while the cover holes **12c** ensure a necessary level of air permeability during smoking. In addition, the heating element of the aromatic device can pierce the cover **12** when the aroma cartridge **10** is attached to the aromatic device. During use, the user inserts the heating element of the aromatic device into the aromatic generator **15** through the cover **12** to allow the heating element to heat the aromatic sources **15a** so that an aerosol is formed.

[0041] FIG. 7 shows one example of the cover **12**, which has a structure including a first circular plate **12a** and a second circular plate **12b** larger in diameter than the first circular plate **12a**, which are coaxially integrated. The cover **12** has cover holes **12c**, which are through holes passing through the first and second circular plates **12a** and **12b**. The cover holes **12c** may be polygonal, circular, or elliptical. Examples of polygonal shapes include rectangle, square, rhombus, and hexagon. In the example shown in FIG. 7, the cover holes **12c** are hexagonal holes. The cover holes **12c** are made polygonal for the purpose of preventing the spherical granules of the aromatic sources **15a** from plugging the cover holes **12c**. The cover **12** may be made of sponge paper.

[0042] FIG. 8 is an enlarged view of the area A in FIG. 4. As shown in FIG. 8, in the cover **12**, the first circular plate **12a** is surrounded by the inner wall of the casing member **11** while the second circular plate **12b** is attached from outside the casing member **11** and fixed in contact with the end of the casing member **11**. Such a structure prevents the cover **12** from entering the interior of the casing member **11** in a cylindrical shape. The cover **12** shown in FIG. 7 is merely one example of the cover. The cover may be of any other type which ensures a necessary level of air permeability during smoking and prevents the granules of the aromatic sources **15a** from leaking out and which the heating element of the aromatic device can pierce. For example, the cover may be made of a porous material, and the cover holes may be the pores of the porous material.

[0043] FIG. 9 is a perspective view showing another example of the cover for the aroma cartridge. FIG. 10 is a cross-sectional view showing an end portion of the aroma cartridge provided with the cover of FIG. 9. The cover **18** is a paper cup made of highly breathable paper. An adhesive is applied to an inner surface **18a** of the cover **18**. At temperatures close to room temperature, the adhesive is in a dry state and does not exhibit tackiness. As shown in FIG. 10, when the cover **18** is put on an end of the casing member **11** and

heated at its side, the adhesive on the inner surface **18a** melts to bond the inner surface **18a** to the casing member **11**. The paper used to form the cover **18** preferably has pores that are formed between fibers and ensure a sufficient level of air permeability during smoking. This means that the pores formed between fibers are used as “cover holes”. If pores between fibers in the paper cannot ensure a sufficient level of air permeability, plural cover holes may be punched in the paper before use.

[0044] FIG. **11** is a cross-sectional view illustrating another example of the cover for the aroma cartridge. FIG. **12** is an enlarged view in the direction B in FIG. **11**. FIG. **13** is a view showing a further example of the cover shown in FIG. **11**. FIG. **14** is a view showing a further example of the cover shown in FIG. **11**. The cover **19** of this type includes paper honeycomb. The honeycomb structure has holes for serving as cover holes. As used herein, the term “paper honeycomb” should be broadly interpreted and is intended to include not only an arrangement of regular hexagonal holes as shown in FIG. **12** but also all types of other tight arrangements of holes in substantially the same shape, such as those shown in FIGS. **13** and **14**.

[0045] The filter **13** is provided on a side of the aromatic generator **15** opposite to the cover **12**. In this embodiment, as shown in FIG. **4**, the filter **13** is provided on a side of the support member **14** opposite to the aromatic generator **15**. The filter **13** has the function of filtering an aerosol to reduce the amount of harmful substances in the aerosol. The filter **13** is cylindrical and may include cellulose acetate fibers. The filter **13** may have a length of 10 mm to 30 mm.

[0046] According to this embodiment, the granular shape of the aromatic substrates ensures that there are many spaces between the aromatic substrate granules. Therefore, the aromatic substrates provide high air permeability, which makes inhalation easy during smoking. In addition, many spaces between the granules allow the heat from the heating element of the aromatic device to be transmitted a relatively long distance also by convection and radiation, so that the aromatic substrates can be more uniformly heated to generate a sufficient amount of aromatic in a fully enjoyable manner.

Embodiment 2

[0047] FIG. **15** is a perspective cross-sectional view schematically showing an aroma cartridge **20** according to Embodiment 2 of the present invention. FIG. **16** is an enlarged view of the area C in FIG. **15**. Embodiment 2 is a modification of Embodiment 1. Accordingly, Embodiment 2 will be described using the same reference signs as those in Embodiment 1 with respect to parts, members, portions, and elements having the same functions as those in Embodiment 1 so that repeated description of them may be omitted. As shown in FIGS. **15** and **16**, the aroma cartridge **20** has a second filter **22** on the aromatic generator **15** side of the filter **13**, specifically, between the filter **13** and the support member **14**, which is the largest difference from the aroma cartridge **10**.

[0048] FIG. **17** is a perspective view of the second filter **22** in Embodiment 2. The second filter **22** is a cylinder made of activated carbon. The second filter **22** has a through hole **22a** at its center along the axial direction of the cylinder. During smoking, an aerosol generated from the aromatic sources **15a** passes through the through hole **22a** and flows toward the filter **13**. The through hole **22a** has a size that ensures air

permeability during smoking. The activated carbon in the second filter **22** reduces the amount of harmful substances in the aerosol passing through. Besides the activated carbon, the second filter **22** may include a sponge, seaweed, or other fibers.

[0049] Elongation of the filter **13** may be a measure to enhance the harmful substance decreasing effect of the filter **13**. However, such a measure may reduce the air permeability of the filter **13**. Instead, the second filter **22** may be provided to enhance the harmful substance decreasing effect while the air permeability is ensured without elongation of the filter **13**. In addition, the second filter **22** also has the effects of cooling the aerosol and removing various types of dust flowing from the aromatic generator **15**.

Embodiment 3

[0050] FIG. **18** is a perspective cross-sectional view schematically showing an aroma cartridge **30** according to Embodiment 3 of the present invention. Embodiment 3 is a modification of Embodiment 2. Accordingly, Embodiment 3 will be described using the same reference signs as those in Embodiment 2 with respect to parts, members, portions, and elements having the same functions as those in Embodiment 2 so that repeated description of them may be omitted. As shown in FIG. **18**, the aroma cartridge **30** further includes a protective sleeve **32** that covers at least part of the outer circumference of the filter **13**, which is the largest difference from the aroma cartridge **20**.

[0051] The protective sleeve **32** may cover the filter **13** with the casing member **11** in between them or may directly cover the filter **13**. The protective sleeve **32**, which is a portion to be held between the smoker’s lips during smoking, is made of a material that neither deforms due to the heat of the aerosol nor produces toxic or harmful substances. For example, the protective sleeve **32** may include polypropylene (PP). Alternatively, the protective sleeve **32** may include polystyrene (PS), filler mixed polypropylene (PPF), amorphous polyethylene terephthalate (A-PET), or polylactic acid (PLA). The protective sleeve **32** can prevent the smoker’s saliva from penetrating the filter **13** to reduce the air permeability of the filter **13**. The protective sleeve **32** may have a thickness of 0.024 to 1 mm.

[0052] In the embodiments described above, the length of the aromatic generator **15** may be $\frac{1}{8}$ to $\frac{6}{8}$ of the length of the aroma cartridge.

[0053] While the present invention has been described with reference to embodiments, it will be understood that the embodiments are not intended to limit the technical scope of the present invention. It will be apparent to those skilled in the art that the embodiments may be altered or modified in various ways. It will be apparent from the claims that embodiments resulting from such alteration or modification will also fall within the technical scope of the present invention. For example, while the embodiments have been described in detail for easy understanding of the present invention, it will be understood that the present invention should not be construed to necessarily include all the elements described herein. It should be noted that some of the elements in each embodiment may be deleted or replaced by other elements.

EXPLANATION OF REFERENCE NUMERALS

[0054] **10**: Aroma cartridge

[0055] **11**: Casing member

- [0056] 12: Cover
- [0057] 12a: First circular plate
- [0058] 12b: Second circular plate
- [0059] 12c: Cover hole
- [0060] 13: Filter
- [0061] 14: Support member
- [0062] 14a: Cylindrical body
- [0063] 14b: Circular plate
- [0064] 14c: Support member hole
- [0065] 15: Aromatic generator
- [0066] 15a: Aromatic source
- [0067] 18: Cover
- [0068] 18a: Inner surface
- [0069] 19: Cover
- [0070] 20: Aroma cartridge
- [0071] 22: Second filter
- [0072] 22a: Cylinder
- [0073] 22b: Through hole
- [0074] 32: Protective sleeve

1. An aroma cartridge attachable to an aromatic device, the aroma cartridge comprising:

an aromatic generator having an aromatic source and configured to generate an aerosol containing an aromatic component; and

a cover having a plurality of cover holes that are permeable to air and impermeable to the aromatic source.

2. (canceled)

3. The aroma cartridge according to claim 1, which is configured to generate the aerosol upon heating by a heating element of the aromatic device when attached to the aromatic device, wherein

the cover is capable of being pierced by the heating element.

4. The aroma cartridge according to claim 1, wherein the aromatic source is in a granular form.

5. The aroma cartridge according to claim 4, wherein the aromatic source is substantially spherical.

6. The aroma cartridge according to claim 1, wherein the cover holes are in a polygonal, circular, or elliptical shape.

7. The aroma cartridge according to claim 6, wherein the polygonal shape is a rectangular, square, rhombic, or hexagonal shape.

8. The aroma cartridge according to claim 1, wherein the cover comprises a structure comprising a first circular plate and a second circular plate larger in diameter than the first circular plate, the first and second circular plates are coaxially

integrated, and the cover holes are through holes passing through the first and second circular plates.

9. The aroma cartridge according to claim 8, wherein the aromatic generator has an outer circumference surrounded by a casing member, and

in the cover, the first circular plate is surrounded by an inner side of the casing member, and the second circular plate is attached from outside the casing member and fixed in contact with an end of the casing member.

10. The aroma cartridge according to claim 8, wherein the cover comprises sponge paper.

11. The aroma cartridge according to claim 1, wherein the aromatic generator has an outer circumference surrounded by a casing member, and

the cover is a paper cup put on an end of the casing member.

12. The aroma cartridge according to claim 1, wherein the cover comprises paper honeycomb.

13. The aroma cartridge according to claim 1, wherein the cover comprises a porous material, and the cover holes are pores of the porous material.

14. The aroma cartridge according to claim 1, further comprising a support member that is provided on a side of the aromatic generator opposite to the cover to support the aromatic generator, wherein

the support member has a plurality of support member holes that are permeable to the aerosol and impermeable to the aromatic source.

15-19. (canceled)

20. The aroma cartridge according to claim 1, further comprising a filter that is provided on a side of the aromatic generator opposite to the cover to filter the aerosol.

21. The aroma cartridge according to claim 14, further comprising a filter that is provided on a side of the support member opposite to the aromatic generator to filter the aerosol.

22-25. (canceled)

26. The aroma cartridge according to claim 20, further comprising a protective sleeve that covers at least part of an outer circumference of the filter.

27-28. (canceled)

29. The aroma cartridge according to claim 1, wherein the aromatic generator's length is $\frac{1}{8}$ to $\frac{3}{8}$ of the length of the aroma cartridge.

* * * * *