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(54) **NON-COMBUSTION TYPE FLAVOR INHALER**

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(57) **ABSTRACT**

A non-combustion type flavor inhaler comprises: a reservoir storing an aerosol source; a transfer unit transferring the aerosol source from upstream of the liquid surface forming location to a liquid surface forming location at which a liquid surface of the aerosol source is formed, the transfer unit being configured to form the liquid surface; a suction port arranged downstream of the liquid surface forming location; a first atomizer atomizing the aerosol source located upstream of the liquid surface forming location; and a second atomizer atomizing a droplet generated from the liquid surface formed at the liquid surface forming location, the droplet being located downstream of the liquid surface forming location.

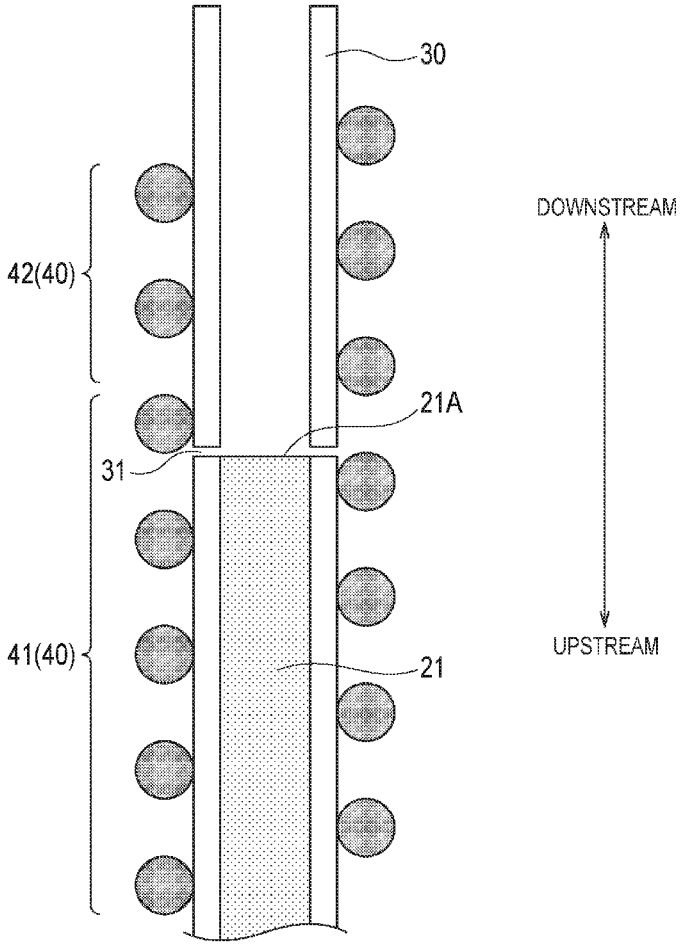


FIG. 1

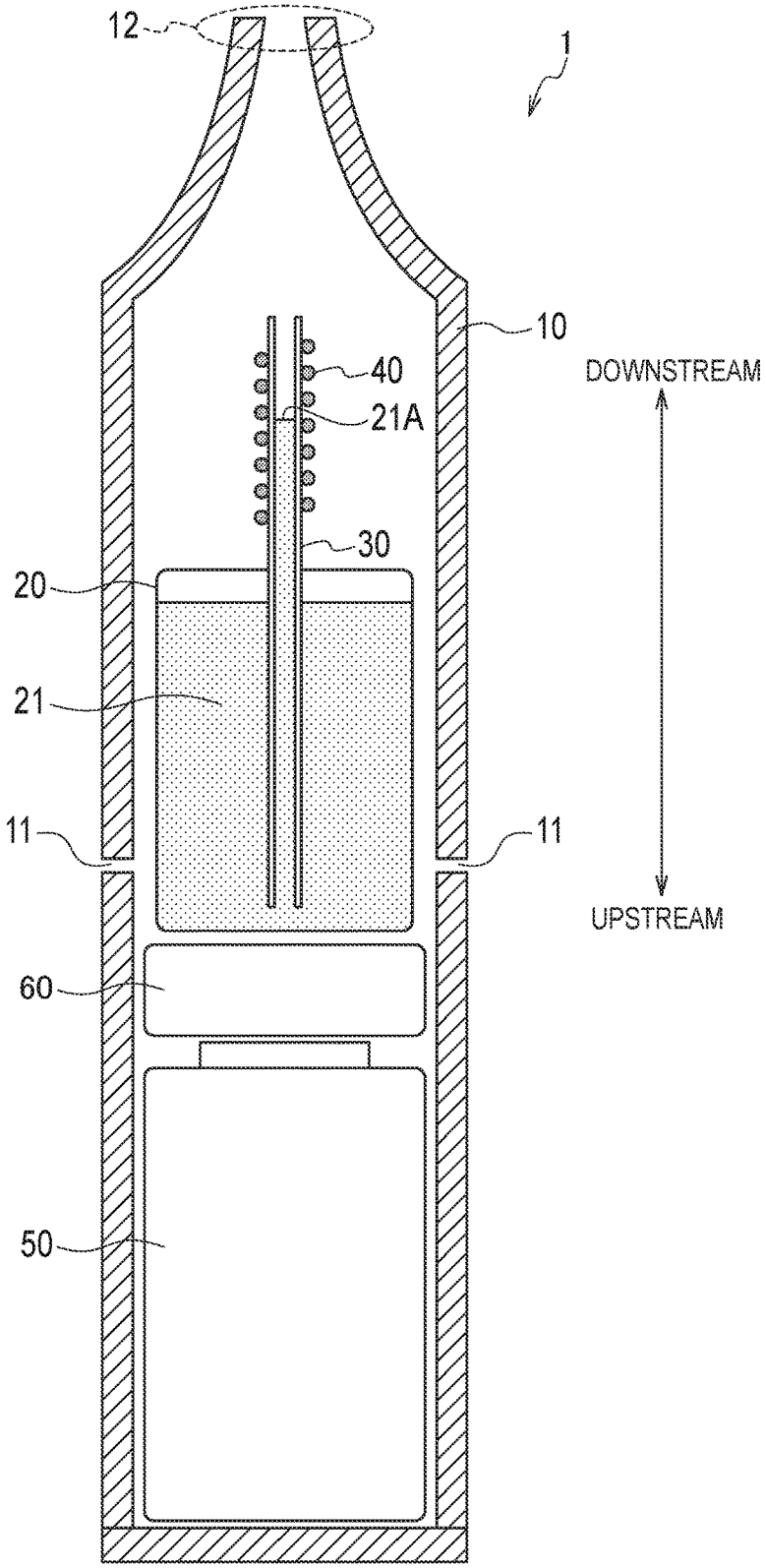


FIG. 2

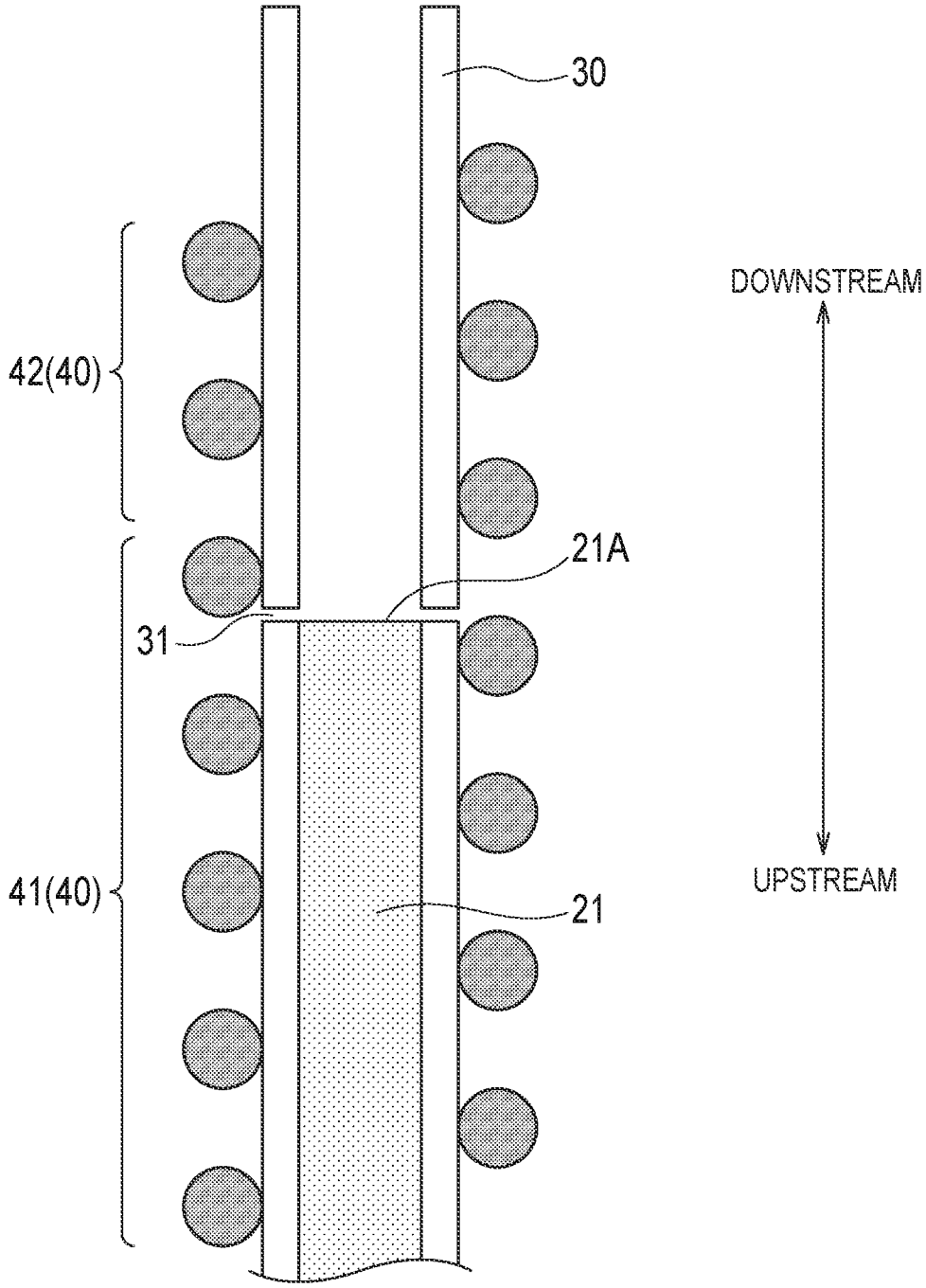


FIG. 3

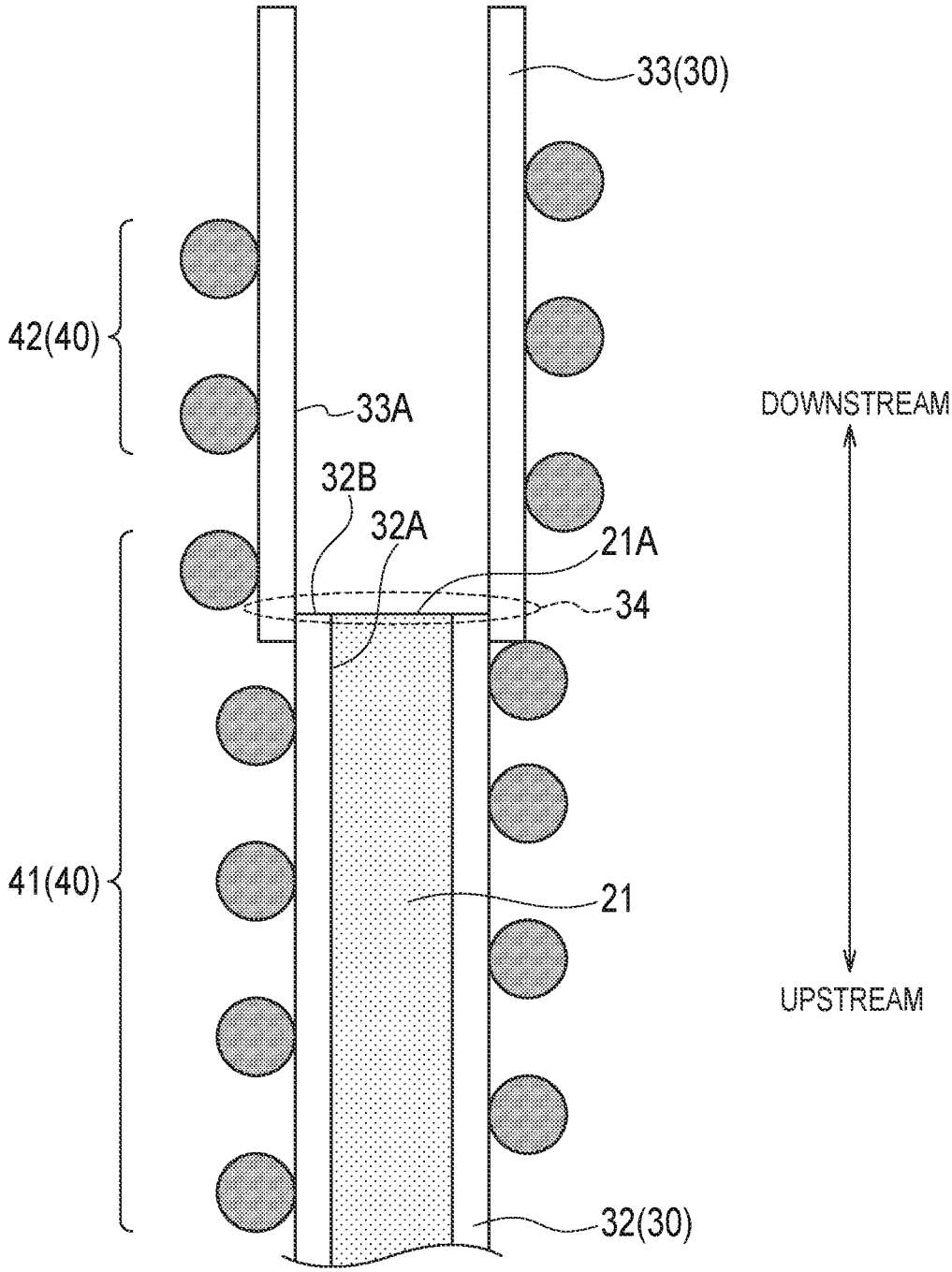

33(30)
42(40)
33A
32B
32A
21A
34
DOWNSTREAM
41(40)
21
UPSTREAM
32(30)

FIG. 4

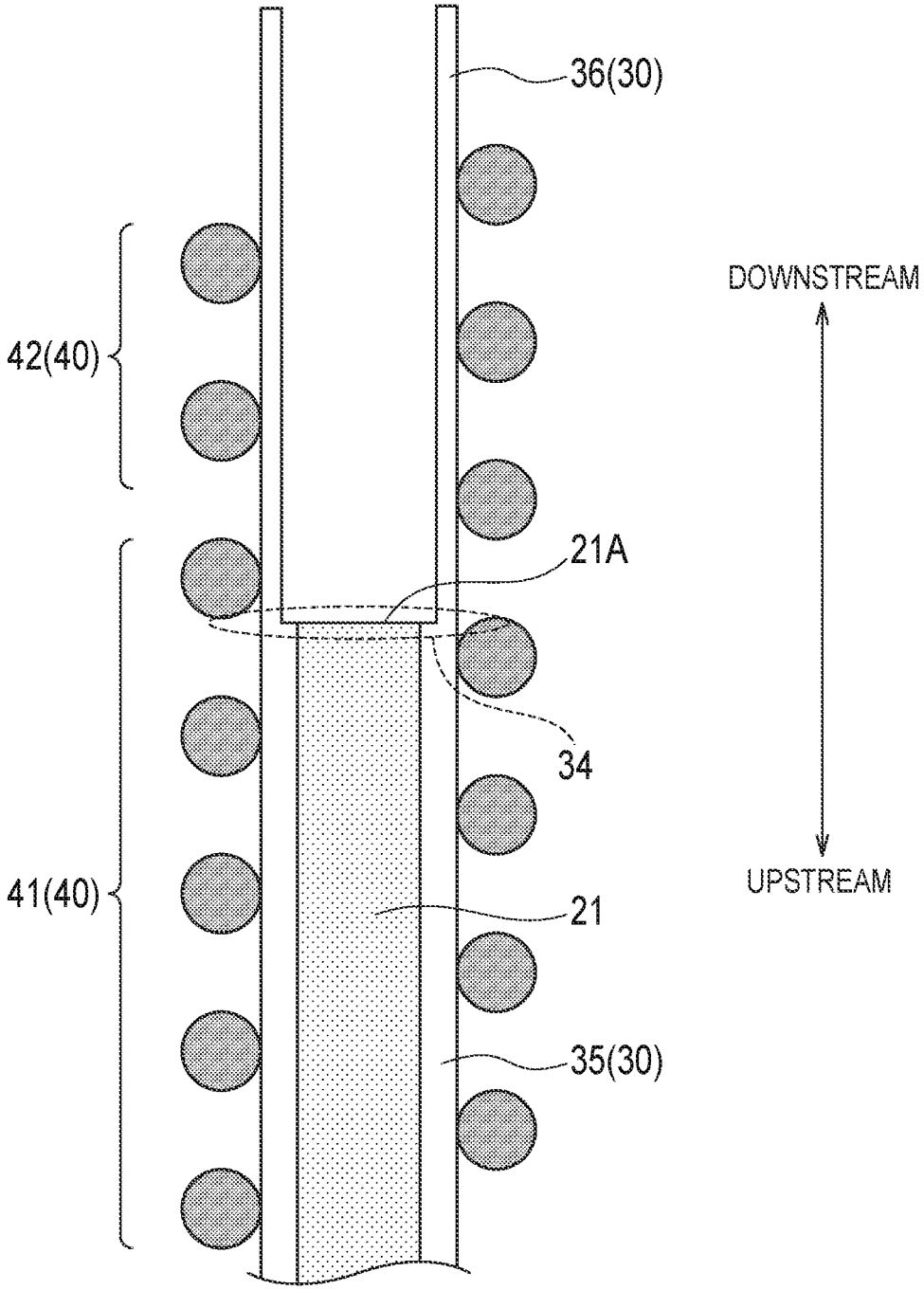


FIG. 5

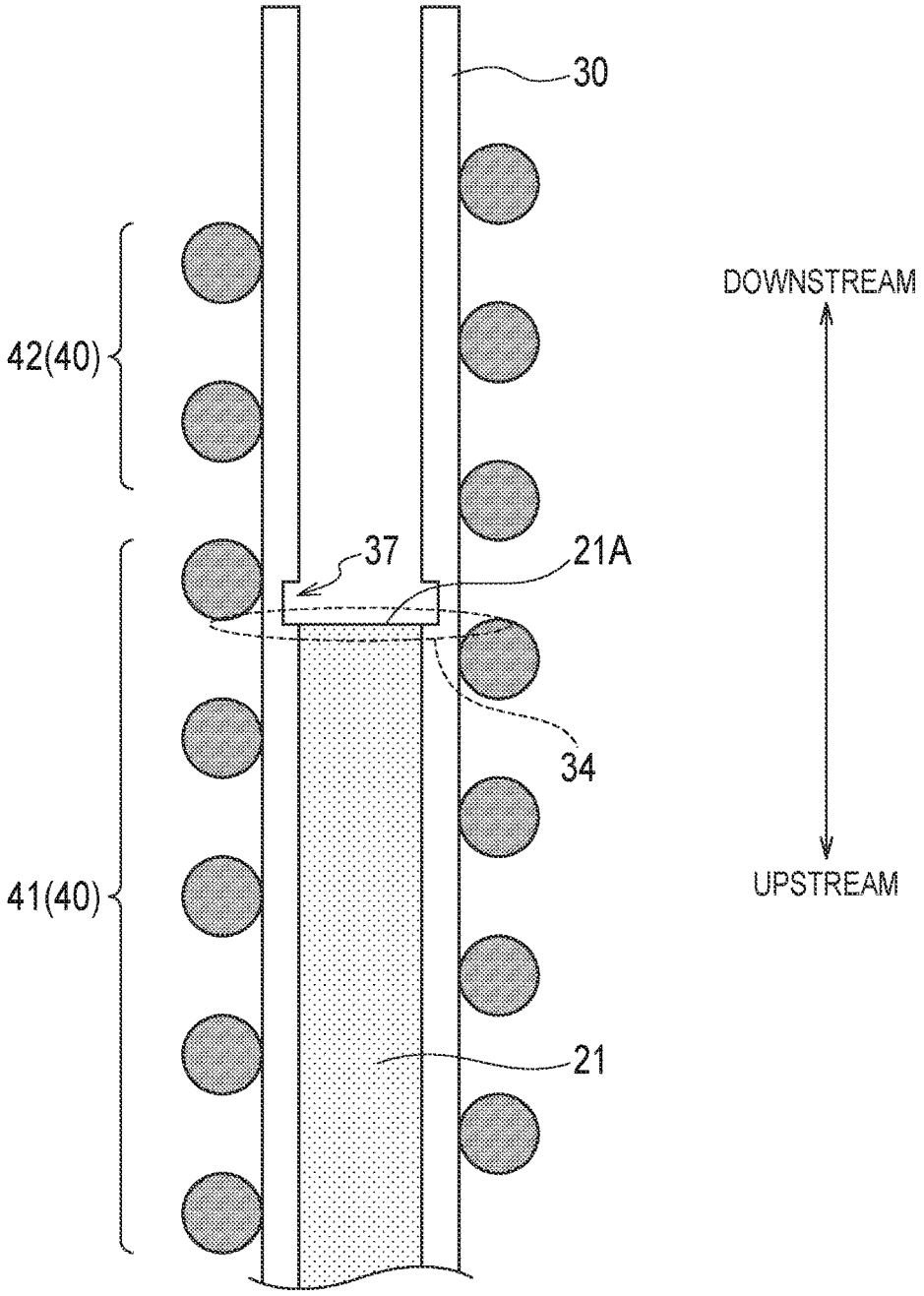


FIG. 6

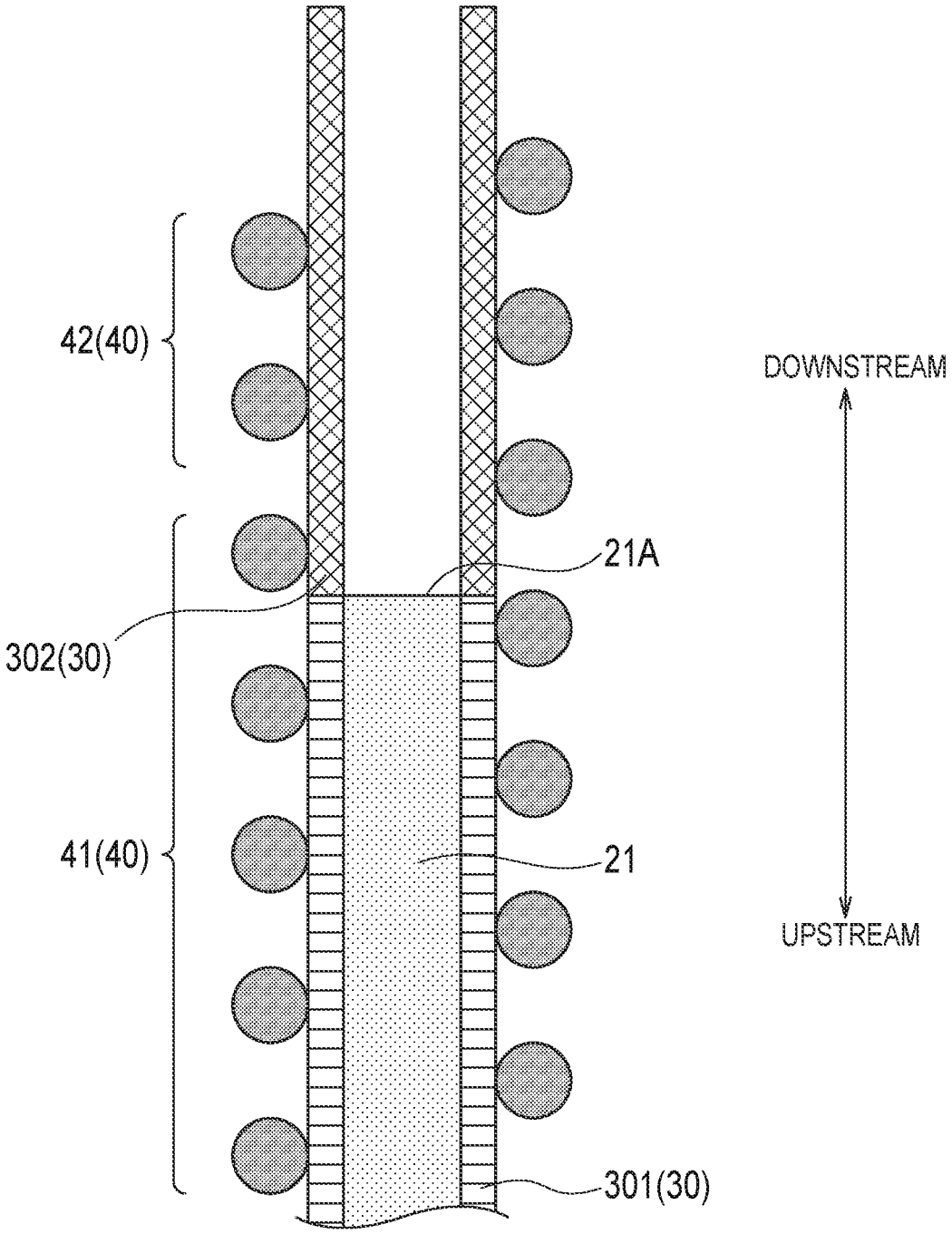
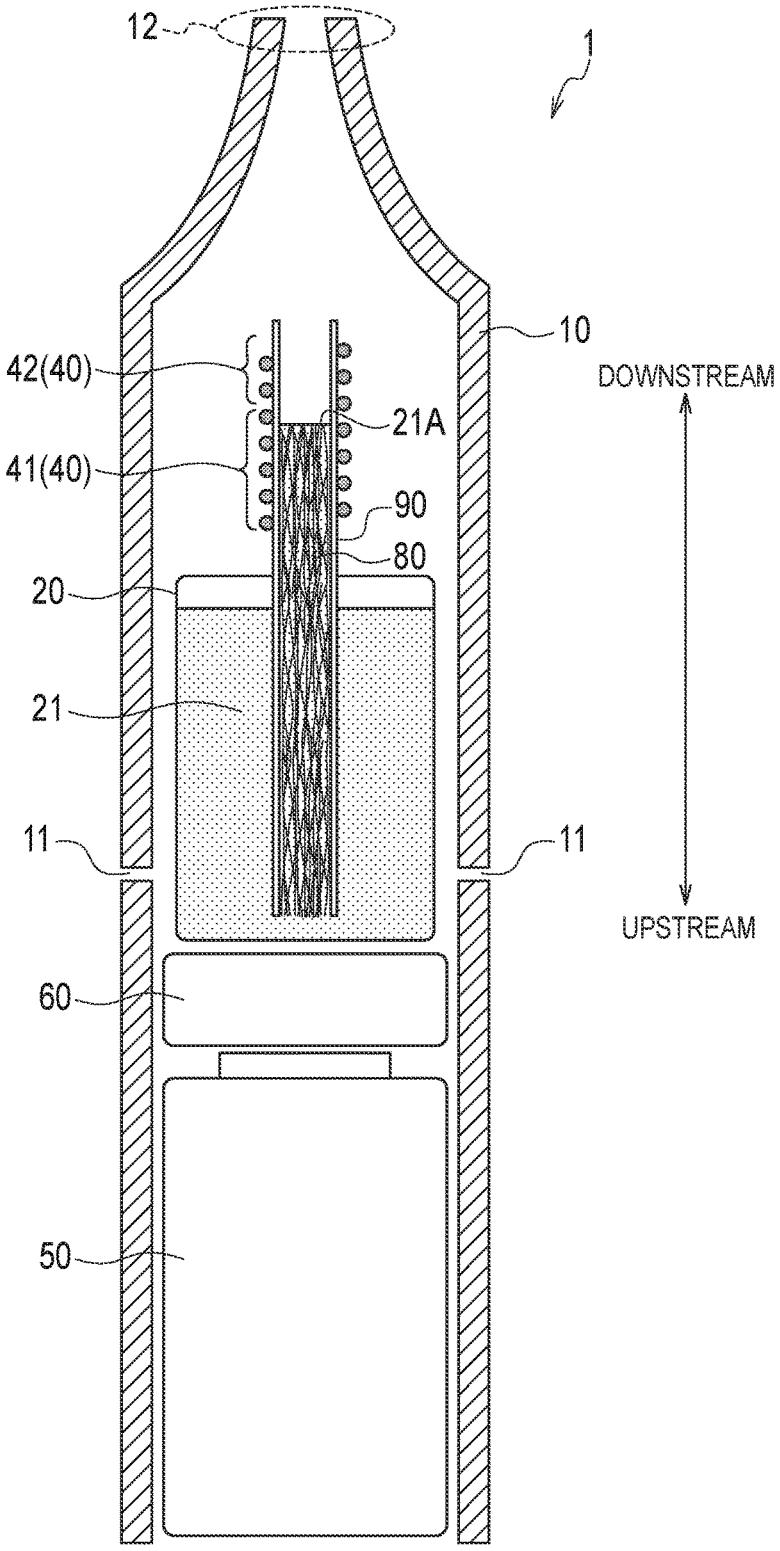


FIG. 7


12
1
10
42(40)
21A
41(40)
90
80
20
21
11
11
DOWNSTREAM
UPSTREAM
60
50

NON-COMBUSTION TYPE FLAVOR INHALER

TECHNICAL FIELD

[0001] The present invention relates to a non-combustion type flavor inhaler having an atomizer that atomizes an aerosol source without burning.

BACKGROUND ART

[0002] Conventionally, a non-combustion type flavor inhaler for inhaling flavor without burning has been known. The non-combustion type flavor inhaler has a reservoir that stores an aerosol source, a capillary tube that sucks up the aerosol source from upstream toward downstream, and an atomizer that atomizes the aerosol source sucked up by the capillary tube. An upstream end of the capillary tube reaches the aerosol source stored in the reservoir, and the atomizer is disposed at a downstream end of the capillary tube (e.g., Patent Literatures 1 and 2).

CITATION LIST

Patent Literature

[0003] Patent Literature 1: WO 2013/083634 A
[0004] Patent Literature 2: JP 2005-537919 A

SUMMARY

[0005] A first feature is summarized as a non-combustion type flavor inhaler comprising: a reservoir storing an aerosol source; a transfer unit transferring the aerosol source from upstream of the liquid surface forming location to a liquid surface forming location at which a liquid surface of the aerosol source is formed, the transfer unit being configured to form the liquid surface; a suction port arranged downstream of the liquid surface forming location; a first atomizer atomizing the aerosol source located upstream of the liquid surface forming location; and a second atomizer atomizing a droplet generated from the liquid surface formed at the liquid surface forming location, the droplet being located downstream of the liquid surface forming location.

[0006] A second feature is summarized as the non-combustion type flavor inhaler according to the first feature, wherein the transfer unit is configured by a columnar member extending from upstream toward downstream, the columnar member holding the aerosol source such that the liquid surface is formed at the liquid surface forming location.

[0007] A third feature is summarized as the non-combustion type flavor inhaler according to the first feature or the second feature, wherein the first atomizer is arranged around the transfer unit at the liquid surface forming location, and the second atomizer is arranged downstream of the liquid surface faulting location.

[0008] A fourth feature is summarized as the non-combustion type flavor inhaler according to any one of the first feature to the third feature, wherein the transfer unit transfers the aerosol source by a capillary phenomenon.

[0009] A fifth feature is summarized as the non-combustion type flavor inhaler according to any one of the first feature to the fourth feature, wherein the transfer unit is formed by a tubular member transferring the aerosol source by a capillary phenomenon.

[0010] A sixth feature is summarized as the non-combustion type flavor inhaler according to the fifth feature, wherein the tubular member has a liquid surface defining part to define the liquid surface at the liquid surface forming location, the tubular member transferring the aerosol source to at least the liquid surface forming location, the tubular member including a portion extending downstream of the liquid surface forming location.

[0011] A seventh feature is summarized as the non-combustion type flavor inhaler according to the sixth feature, wherein the liquid surface defining part is configured by an opening disposed at the liquid surface forming location.

[0012] An eighth feature is summarized as the non-combustion type flavor inhaler according to the sixth feature, wherein an inner wall of the tubular member includes a step so that a hollow cross-sectional area on a downstream side of the liquid surface forming location is larger than a hollow cross-sectional area on the upstream side of the liquid surface forming location in an orthogonal cross section orthogonal to a direction from upstream toward downstream, and the liquid surface defining part is configured by the step.

[0013] A ninth feature is summarized as the non-combustion type flavor inhaler according to the eighth feature, wherein the tubular member comprises: a first pipe extending upstream from the liquid surface forming location; and a second pipe extending downstream at least from the liquid surface forming location, the second pipe is arranged outside the first pipe in the orthogonal cross section, and the step is formed by an inner wall of the first pipe, a downstream end of the first pipe, and an inner wall of the second pipe.

[0014] A tenth feature is summarized as the non-combustion type flavor inhaler according to the sixth feature, wherein a property of an inner wall of the tubular member is configured to change at the liquid surface forming location or on an upstream side of the liquid surface forming location.

[0015] An eleventh feature is summarized as the non-combustion type flavor inhaler according to any one of the sixth feature to the tenth feature, wherein the second atomizer is arranged around the tubular member on a downstream side of the liquid surface forming location.

[0016] A twelfth feature is summarized as the non-combustion type flavor inhaler according to any one of the first feature to the eleventh feature, wherein the first atomizer and the second atomizer are provided continuously over the liquid surface forming location.

BRIEF DESCRIPTION OF DRAWINGS

[0017] FIG. **1** is a view showing a flavor inhaler **1** according to an embodiment.

[0018] FIG. **2** is a view showing a configuration around a liquid surface forming location according to the embodiment.

[0019] FIG. **3** is a view showing a configuration around a liquid surface forming location according to Modified Example 1.

[0020] FIG. **4** is a view showing a configuration around a liquid surface forming location according to Modified Example 2.

[0021] FIG. **5** is a view showing a configuration around a liquid surface forming location according to Modified Example 3.

[0022] FIG. **6** is a view showing a configuration around a liquid surface forming location according to Modified Example 4.

[0023] FIG. **7** is a view showing a flavor inhaler **1** according to Modified Example 5.

DESCRIPTION OF EMBODIMENTS

[0024] Hereinafter, the embodiments of the present invention will be described with reference to the drawings. In the following drawings, identical or similar components are denoted by identical or similar reference numerals.

[0025] Therefore, specific dimensions should be determined with reference to the description below. It is needless to mention that different relationships and ratio of dimensions may be included in different drawings.

SUMMARY OF EMBODIMENT

[0026] In the non-combustion type flavor inhaler described in the above background art, the aerosol source sucked up by the capillary tube reaches the downstream end of the capillary tube due to a capillary phenomenon. Therefore, a droplet with a large particle diameter may be scattered due to atomization of the aerosol source reaching the downstream end of the capillary tube.

[0027] A non-combustion type flavor inhaler according to an embodiment comprises: a reservoir storing an aerosol source; a transfer unit transferring the aerosol source from upstream of the liquid surface forming location to a liquid surface forming location at which a liquid surface of the aerosol source is formed, the transfer unit being configured to form the liquid surface; a suction port arranged downstream of the liquid surface forming location; a first atomizer atomizing the aerosol source located upstream of the liquid surface forming location; and a second atomizer atomizing a droplet generated from the liquid surface formed at the liquid surface forming location, the droplet being located downstream of the liquid surface forming location.

[0028] In the embodiment, the non-combustion type flavor inhaler includes the second atomizer that atomizes a droplet located downstream of the liquid surface forming location at which the liquid surface of the aerosol source is formed. This can suppress scattering of a droplet with a large particle diameter due to atomization of the aerosol source.

Embodiment

[0029] (Non-Combustion Type Flavor Inhaler)

[0030] Hereinafter, a non-combustion type flavor inhaler according to an embodiment will be described. FIG. **1** is a view showing a non-combustion type flavor inhaler **1** according to the embodiment. The non-combustion type flavor inhaler **1** is a device for inhaling a flavoring component without burning. It should be noted that, in the following description, the non-combustion type flavor inhaler **1** is simply referred to as a flavor inhaler **1**.

[0031] As shown in FIG. **1**, the flavor inhaler **1** includes a housing **10**, a storage container **20**, a tubular member **30**, an atomizer **40**, a power source **50**, and a control circuit **60**.

[0032] The housing **10** accommodates each member forming the flavor inhaler **1**. The housing **10** has an inlet **11** and a suction port **12**. The inlet **11** is an opening to guide air into the housing **10**. The suction port **12** is a portion to be held by a user's mouth, and is an opening to guide air into the user's mouth.

[0033] The storage container **20** stores the aerosol source **21**. The aerosol source **21** is made of a raw material that generates aerosol by atomization. The aerosol source **21** is liquid made of an alcohol such as glycerin or propylene glycol, water, or their mixtures. The aerosol source **21** preferably contains a flavoring component. The flavoring component may be an extracted component extracted from various types of natural materials. The extracted component may be a tobacco extract component, or may be a tobacco smoke condensate component. Alternatively, the flavoring component may be a component such as menthol or caffeine.

[0034] The tubular member **30** is an example of a transfer unit that transfers the aerosol source **21** to the liquid surface forming location at which a liquid surface **21**A of the aerosol source **21** is formed, from upstream of the liquid surface forming location, to form the liquid surface **21**A. Further, the tubular member **30** is an example of a columnar member that extends from upstream toward downstream, and holds the aerosol source **21** such that the liquid surface **21**A is formed at the liquid surface forming location.

[0035] In particular, it should be noted that the tubular member **30** transfers the aerosol source **21** by a capillary phenomenon, and holds the aerosol source **21** such that the liquid surface **21**A of the aerosol source **21** is formed at the liquid surface forming location. Details of the tubular member **30** around the liquid surface forming location will be described later (see FIG. **2**).

[0036] Here, "downstream" and "upstream" mean downstream and upstream in a transfer of fluid. Here, the fluid means the aerosol source **21**, or the aerosol atomized by the atomizer **40**. The transfer means transferring of the aerosol source **21** by a capillary phenomenon, or transferring of the aerosol source **21** or of the aerosol atomized by the atomizer **40**, due to an inhalation action.

[0037] The atomizer **40** atomizes the aerosol source **21** held by the tubular member **30**, near the liquid surface **21**A of the aerosol source **21**. In the embodiment, the atomizer **40** is formed by a coil-shaped heater wound around the tubular member **30**. Details of the atomizer **40** around the liquid surface forming location will be described later (see FIG. **2**).

[0038] The power source **50** is a battery that accumulates electric power to be consumed by the flavor inhaler **1**. The power source **50** is a lithium-ion battery, for example.

[0039] The control circuit **60** controls the flavor inhaler **1**. The control circuit **60** is configured by, for example, a CPU and a memory. Specifically, the control circuit **60** is connected to an inhalation operation interface (such as an inhalation button) that can be operated by a user. In a time duration in which the inhalation operation interface is being operated by the user, the control circuit **60** supplies a power output to the atomizer **40**. On the other hand, the control circuit **60** stops the supply of the power output to the atomizer **40** in a time duration in which the inhalation operation interface is not being operated by the user. Alternatively, the control circuit **60** is connected to a suction sensor that detects an inhalation action, and supplies the power output to the atomizer **40** in a time duration in which an inhalation action is being performed. On the other hand, the control circuit **60** stops the supply of the power output to the atomizer **40** in a time duration in which an inhalation action is not being performed.

[0040] (Configuration Around Liquid Surface Forming Location)

[0041] Hereinafter, a configuration around the liquid surface forming location according to the embodiment will be described. FIG. **2** is a view showing a configuration around the liquid surface forming location according to the embodiment.

[0042] As shown in FIG. **2**, the tubular member **30** has an opening **31** disposed at the liquid surface forming location, and has a portion extending downstream from the liquid surface forming location. The opening **31** constitutes a liquid surface defining part that defines the liquid surface **21**A.

[0043] In the embodiment, in the tubular member **30**, an upstream portion from the opening **31** has a function of transferring the aerosol source **21** to the liquid surface forming location by a capillary phenomenon. In the tubular member **30**, a downstream portion from the opening **31** has a function of guiding a droplet scattered due to atomization, to a position where the droplet can be heated by a second atomizer **42**.

[0044] In the embodiment, a plurality of openings **31** may be intermittently provided along a circumferential direction of the tubular member **30**. Alternatively, a single opening **31** may be continuously provided over the entire circumference of the tubular member **30**. That is, the tubular member **30** may be separated into two tubular members near the liquid surface forming location.

[0045] The atomizer **40** includes a first atomizer **41** that atomizes the aerosol source **21** located upstream of the liquid surface forming location, and the second atomizer **42** that atomizes a droplet generated from the liquid surface formed at the liquid surface forming location and located downstream of the liquid surface forming location. In the embodiment, the first atomizer **41** is arranged around the tubular member **30** at the liquid surface forming location, and the second atomizer **42** is arranged around the tubular member **30**, on the downstream side of the liquid surface forming location. The first atomizer **41** and the second atomizer **42** are preferably provided continuously over the liquid surface forming location.

[0046] (Function and Effect)

[0047] In the embodiment, the flavor inhaler **1** includes the second atomizer **42** that atomizes a droplet located downstream of the liquid surface forming location at which the liquid surface **21**A of the aerosol source **21** is formed. This can suppress scattering of a droplet with a large particle diameter due to atomization of the aerosol source **21**.

[0048] In the embodiment, the tubular member **30** extends downstream of the liquid surface forming location, and has the opening **31** disposed at the liquid surface forming location. The opening **31** constitutes a liquid surface defining part that defines the liquid surface **21**A. As a result, since the liquid surface **21**A can be formed in a middle of the tubular member **30** instead of the downstream end of the tubular member **30**, the second atomizer **42** can be easily arranged downstream of the liquid surface forming location. It is easy to guide the a droplet scattered due to the atomization of the aerosol source **21**, to a position where the droplet can be heated by the second atomizer **42**.

[0049] In the embodiment, the second atomizer **42** is arranged around the tubular member **30**, on the downstream side of the liquid surface forming location. Therefore, the second atomizer **42** can be easily disposed at a position where it is easy to atomize a droplet located downstream of the liquid surface forming location.

[0050] In the embodiment, the first atomizer **41** and the second atomizer **42** are continuously provided over the liquid surface forming location. Therefore, it is easy to arrange and configure the atomizer **40** configured by the first atomizer **41** and the second atomizer **42**.

Modified Example 1

[0051] Hereinafter, Modified Example 1 of the embodiment will be described. In the following, differences from the embodiment will be mainly described.

[0052] Specifically, in the embodiment, the liquid surface defining part that defines the liquid surface **21**A is constituted by the opening **31** disposed at the liquid surface forming location. On the other hand, in Modified Example 1, a liquid surface defining part that defines a liquid surface **21**A is constituted by a step provided on an inner wall of a tubular member **30**.

[0053] (Configuration Around Liquid Surface Forming Location)

[0054] Hereinafter, a configuration around the liquid surface forming location according to Modified Example 1 will be described. FIG. **3** is a view showing a configuration around the liquid surface forming location according to Modified Example 1.

[0055] As shown in FIG. **3**, the tubular member **30** includes a first pipe **32** extending upstream from the liquid surface forming location, and a second pipe **33** extending downstream at least from the liquid surface forming location. The second pipe **33** is arranged outside the first pipe **32** in an orthogonal cross section orthogonal to a direction from upstream toward downstream.

[0056] In Modified Example 1, the second pipe **33** may extend from upstream toward downstream of the liquid surface forming location. In other words, the first pipe **32** and the second pipe **33** may overlap each other at the liquid surface forming location.

[0057] In such a case, a liquid surface defining part that defines the liquid surface **21**A is constituted by a step **34** formed by an inner wall **32**A of the first pipe **32**, a downstream end **32**B of the first pipe **32**, and an inner wall **33**A of the second pipe **33**. In other words, in the orthogonal cross section orthogonal to the direction from upstream toward downstream, the inner wall of the tubular member **30** has the step **34** having a larger hollow cross-sectional area on the downstream side of the liquid surface forming location than a hollow cross-sectional area on the upstream side of the liquid surface forming location. That is, the liquid surface forming location is provided at a boundary of different hollow cross-sectional areas.

[0058] In Modified Example 1, the first pipe **32** has a function of transferring the aerosol source **21** to the liquid surface forming location by a capillary phenomenon. The second pipe **33** has a function of guiding a droplet scattered due to atomization, to a position where the droplet can be heated by the second atomizer **42**.

[0059] In Modified Example 1, a first atomizer **41** is arranged around the first pipe **32** and the second pipe **33** at the liquid surface forming location, and a second atomizer **42** is arranged around the second pipe **33**, on the downstream side of the liquid surface forming location. The first

atomizer **41** and the second atomizer **42** are preferably provided continuously over the liquid surface forming location.

[0060] (Function and Effect)

[0061] In Modified Example 1, the step **34** is provided as the liquid surface defining part instead of the opening **31**, but similar effects to the embodiment can be obtained. Further, since the opening **31** is unnecessary, no droplet leaks from the opening **31**.

Modified Example 2

[0062] Hereinafter, Modified Example 2 of the embodiment will be described. In the following, differences from the embodiment will be mainly described.

[0063] Specifically, in the embodiment, the liquid surface defining part that defines the liquid surface **21**A is constituted by the opening **31** disposed at the liquid surface forming location. On the other hand, in Modified Example 2, a liquid surface defining part that defines a liquid surface **21**A is constituted by a step provided on an inner wall of a tubular member **30**.

[0064] (Configuration Around Liquid Surface Forming Location)

[0065] Hereinafter, a configuration around the liquid surface forming location according to Modified Example 2 will be described. FIG. **4** is a view showing a configuration around the liquid surface forming location according to Modified Example 2.

[0066] As shown in FIG. **4**, the tubular member **30** includes a first portion **35** extending upstream from the liquid surface forming location, and a second portion **36** extending downstream from the liquid surface forming location. In an orthogonal cross section orthogonal to a direction from upstream toward downstream, a hollow cross-sectional area of the second portion **36** is larger than a hollow cross-sectional area of the first portion **35**.

[0067] In such a case, the liquid surface defining part that defines the liquid surface **21**A is constituted by a step **34** formed by a boundary between the first portion **35** and the second portion **36**. In other words, in the orthogonal cross section orthogonal to the direction from upstream toward downstream, the inner wall of the tubular member **30** has the step **34** having a larger hollow cross-sectional area on the downstream side of the liquid surface forming location than a hollow cross-sectional area on the upstream side of the liquid surface forming location.

[0068] In Modified Example 2, the first portion **35** has a function of transferring the aerosol source **21** to the liquid surface forming location by a capillary phenomenon. The second portion **36** has a function of guiding a droplet scattered due to atomization, to a position where the droplet can be heated by a second atomizer **42**.

[0069] In Modified Example 2, the first atomizer **41** is arranged around the first portion **35** and the second portion **36** at the liquid surface forming location, and the second atomizer **42** is arranged around the second portion **36**, on the downstream side of the liquid surface forming location. The first atomizer **41** and the second atomizer **42** are preferably provided continuously over the liquid surface forming location.

[0070] (Function and Effect)

[0071] In Modified Example 2, the step **34** is provided as the liquid surface defining part instead of the opening **31**, but similar effects to the embodiment can be obtained. Further, since the opening **31** is unnecessary, no droplet leaks from the opening **31**.

Modified Example 3

[0072] Hereinafter, Modified Example 3 of the embodiment will be described. In the following, differences from the embodiment will be mainly described.

[0073] Specifically, in the embodiment, the liquid surface defining part that defines the liquid surface **21**A is constituted by the opening **31** disposed at the liquid surface forming location. On the other hand, in Modified Example 3, a liquid surface defining part that defines a liquid surface **21**A is constituted by a step provided on an inner wall of a tubular member **30**.

[0074] (Configuration Around Liquid Surface Forming Location)

[0075] Hereinafter, a configuration around the liquid surface forming location according to Modified Example 3 will be described. FIG. **5** is a view showing a configuration around the liquid surface forming location according to Modified Example 3.

[0076] As shown in FIG. **5**, the inner wall of the tubular member **30** has a recess **37** provided at the liquid surface forming location. The liquid surface defining part that defines the liquid surface **21**A is constituted by a step **34** that is formed by an upstream portion of the recess **37**. In other words, in an orthogonal cross section orthogonal to a direction from upstream toward downstream, the inner wall of the tubular member **30** has the step **34** having a larger hollow cross-sectional area on the downstream side of the liquid surface forming location than a hollow cross-sectional area on the upstream side of the liquid surface forming location.

[0077] In Modified Example 3, a plurality of recesses **37** may be intermittently provided along a circumferential direction of the tubular member **30**. Alternatively, a single recess **37** may be continuously provided over the entire circumference of the tubular member **30**.

[0078] In Modified Example 3, in the tubular member **30**, the upstream portion from the recess **37** has a function of transferring the aerosol source **21** to the liquid surface forming location by a capillary phenomenon. In the tubular member **30**, a downstream portion from the recess **37** has a function of guiding the a droplet scattered due to atomization, to a position where the droplet can be heated by the second atomizer **42**.

[0079] In Modified Example 3, the first atomizer **41** is arranged around the tubular member **30** at the liquid surface forming location, and the second atomizer **42** is arranged around the tubular member **30**, on the downstream side of the liquid surface forming location. The first atomizer **41** and the second atomizer **42** are preferably provided continuously over the liquid surface forming location.

[0080] (Function and Effect)

[0081] In Modified Example 3, the step **34** is provided as the liquid surface defining part instead of the opening **31**, but similar effects to the embodiment can be obtained. Further, since the opening **31** is unnecessary, no droplet leaks from the opening **31**.

Modified Example 4

[0082] Hereinafter, Modified Example 4 of the embodiment will be described. In the following, differences from the embodiment will be mainly described.

[0083] Specifically, in the embodiment, the liquid surface defining part that defines the liquid surface **21**A is constituted by the opening **31** disposed at the liquid surface forming location. On the other hand, in Modified Example 4, a property of an inner wall of a tubular member **30** is changed at the liquid surface forming location or on an upstream side of the liquid surface forming location.

[0084] (Configuration Around Liquid Surface Forming Location)

[0085] Hereinafter, a configuration around the liquid surface forming location according to Modified Example 4 will be described. FIG. **6** is a view showing a configuration around a liquid surface forming location according to Modified Example 4.

[0086] As shown in FIG. **6**, the tubular member **30** includes a first portion **301** extending upstream from the liquid surface forming location, a second portion **302** continuous with the first portion **301** and extending downstream from the liquid surface forming location.

[0087] Here, the property of the inner wall of the tubular member **30** is changed at the liquid surface forming location. That is, a property of an inner wall of the second portion **302** is different from a property of an inner wall of the first portion **301**. In FIG. **6**, the property of the inner wall of the tubular member **30** is changed at the liquid surface forming location, but the property may be changed on the upstream side of the liquid surface forming location. The property of the inner wall is a property that affects the capillary phenomenon, for example, wettability of the inner wall against the aerosol source **21**. In particular, wettability of the inner wall of the second portion **302** against the aerosol source **21** is poor as compared to wettability of the inner wall of the first portion **301** against the aerosol source **21**. Accordingly, the inner wall of the second portion **302** constitutes a liquid surface defining part that defines the liquid surface **21**A.

[0088] Here, wettability of the inner wall of the tubular member **30** against the aerosol source **21** depends on a material and a surface roughness of the inner wall of the first portion **301** and the inner wall of the second portion **302**. By changing the material and the surface roughness of the inner wall of the first portion **301** and the inner wall of the second portion **302**, the wettability of the inner wall of the tubular member **30** against the aerosol source **21** can be changed.

[0089] In Modified Example 3, the first portion **301** has a function of transferring the aerosol source **21** to the liquid surface forming location by a capillary phenomenon. The second portion **302** has a function of guiding a droplet scattered due to atomization, to a position where the droplet can be heated by the second atomizer **42**.

[0090] In Modified Example 4, the first atomizer **41** is arranged around the first portion **301** and the second portion **302** at the liquid surface forming location, and the second atomizer **42** is arranged around the second portion **302**, on the downstream side of the liquid surface forming location. The first atomizer **41** and the second atomizer **42** are preferably provided continuously over the liquid surface forming location.

[0091] (Function and Effect)

[0092] In Modified Example 4, instead of the opening **31**, the liquid surface defining part is constituted by a change in the property of the inner wall of the tubular member **30**, but similar effects to the embodiment can be obtained. Further, since the opening **31** is unnecessary, no droplet leaks from the opening **31**.

Modified Example 5

[0093] Hereinafter, Modified Example 5 of the embodiment will be described. In the following, differences from the embodiment will be mainly described.

[0094] Specifically, in the embodiment, the tubular member **30** has been exemplified as a transfer unit that forms the liquid surface **21**A of the aerosol source **21** at the liquid surface forming location. On the other hand, in Modified Example 5, the transfer unit is a fibrous member formed by twisting glass fibers or the like.

[0095] (Non-Combustion Type Flavor Inhaler)

[0096] Hereinafter, a non-combustion type flavor inhaler according to Modified Example 5 will be described. FIG. **7** is a view showing a flavor inhaler **1** according to Modified Example 5. However, in FIG. **7**, only a part of the flavor inhaler **1** is shown, and a storage container **20**, a power source **50**, a control circuit **60**, and the like are omitted.

[0097] As shown in FIG. **7**, the flavor inhaler **1** has a fibrous member **80** and a holding member **90** instead of the tubular member **30**.

[0098] The fibrous member **80** is an example of a transfer unit that transfers an aerosol source **21** to a liquid surface forming location at which a liquid surface **21**A of the aerosol source **21** is formed, from upstream of the liquid surface forming location, to form the liquid surface **21**A.

[0099] Specifically, the fibrous member **80** is formed by twisting glass fibers or the like. A capillary phenomenon occurs due to a space between the glass fibers. Therefore, it should be noted that the fibrous member **80** is an example of a columnar member that transfers the aerosol source **21** by a capillary phenomenon, and holds the aerosol source **21** such that the liquid surface **21**A of the aerosol source **21** is formed at the liquid surface forming location. In Modified Example 5, a liquid surface defining part that defines the liquid surface **21**A is constituted by the downstream end of the fibrous member **80**.

[0100] The holding member **90** is a member to maintain a shape of the fibrous member **80**. Specifically, the holding member **90** has a tubular shape, and the fibrous member **80** is disposed inside the holding member **90**. The holding member **90** preferably extends downstream of the liquid surface forming location (the downstream end of the fibrous member **80**). It should to be noted that a cavity of the holding member **90** has a size that does not cause a capillary phenomenon.

[0101] In Modified Example 5, the first atomizer **41** is arranged around the holding member **90** at the liquid surface forming location, and the second atomizer **42** is arranged around the holding member **90**, on the downstream side of the liquid surface forming location. The first atomizer **41** and the second atomizer **42** are preferably provided continuously over the liquid surface forming location.

[0102] When the fibrous member **80** has hardness enough to maintain the shape of the fibrous member **80**, the holding member **90** may be omitted. In such a case, the first atomizer **41** is arranged around the fibrous member **80** at the liquid surface forming location. The second atomizer **42** only needs to be arranged downstream of the liquid surface

forming location. For example, the second atomizer **42** may be arranged near the suction port **12** on an inner wall of a housing **10**.

[0103] (Function and Effect)

[0104] In Modified Example 5, the fibrous member **80** is used instead of the tubular member **30**, but effects of the embodiment can be obtained. In addition, since a hollow cross-sectional area (cross-sectional area of the fibrous member **80**) of the holding member **90** is larger than a hollow cross-sectional area of the tubular member **30**, the fibrous member **80** can hold a larger amount of the aerosol source **21** than that in the embodiment.

Other Embodiments

[0105] Although the present invention has been described with the above-described embodiments, the descriptions and drawings forming a part of the disclosure should not be construed as limiting the present invention. From this disclosure, various alternative embodiments, examples, and operation techniques will be apparent to those skilled in the art.

[0106] In the embodiment, the first atomizer **41** and the second atomizer **42** are continuously provided over the liquid surface forming location. However, the embodiment is not limited to this. The first atomizer **41** and the second atomizer **42** may be separate members discontinuous with each other.

[0107] In the embodiment, the coil-shaped heater wound around the tubular member **30** or the like has been exemplified as the first atomizer and the second atomizer. However, the embodiment is not limited to this. The first atomizer only needs to have a function of atomizing the aerosol source located upstream of the liquid surface forming location. The second atomizer only needs to atomize a droplet located downstream of the liquid surface forming location. For example, the first atomizer and the second atomizer may be a heater type atomizer, or may be an ultrasonic type atomizer. The type of the first atomizer may be different from the type of the second atomizer.

[0108] Although not specifically mentioned in the embodiment, the tubular member **30** has a capillary tube that transfers the aerosol source **21** to the liquid surface forming location by a capillary phenomenon, and a guide tube that guides a droplet scattered due to atomization, to a position where the droplet can be heated by the second atomizer **42**. The capillary tube and the guide tube may be separate members, or may be a same member. The capillary tube and the guide tube may or may not be in contact with each other.

[0109] The guide tube may have a capillary function. It should be noted that, even in such a case, the liquid surface **21**A is formed at the liquid surface forming location due to the presence of the liquid surface defining part. Further, as in the embodiment (FIG. **2**), the tubular member **30** may be a member provided with the opening **31** at the liquid surface forming location of one capillary tube.

INDUSTRIAL APPLICABILITY

[0110] According to the embodiment, it is possible to provide the non-combustion type flavor inhaler capable of suppressing scattering of a droplet having a large particle diameter due to atomization of the aerosol source.

1. A non-combustion type flavor inhaler comprising:
a reservoir storing an aerosol source;
a transfer unit transferring the aerosol source from upstream of the liquid surface forming location to a liquid surface forming location at which a liquid surface of the aerosol source is formed, the transfer unit being configured to form the liquid surface;
a suction port arranged downstream of the liquid surface forming location;
a first atomizer atomizing the aerosol source located upstream of the liquid surface forming location; and
a second atomizer atomizing a droplet generated from the liquid surface formed at the liquid surface forming location, the droplet being located downstream of the liquid surface forming location.

2. The non-combustion type flavor inhaler according to claim **1**, wherein the transfer unit is configured by a columnar member extending from upstream toward downstream, the columnar member holding the aerosol source such that the liquid surface is formed at the liquid surface forming location.

3. The non-combustion type flavor inhaler according to claim **1**, wherein the first atomizer is arranged around the transfer unit at the liquid surface forming location, and
the second atomizer is arranged downstream of the liquid surface forming location.

4. The non-combustion type flavor inhaler according to claim **1**, wherein the transfer unit transfers the aerosol source by a capillary phenomenon.

5. The non-combustion type flavor inhaler according to claim **1**, wherein the transfer unit is formed by a tubular member transferring the aerosol source by a capillary phenomenon.

6. The non-combustion type flavor inhaler according to claim **5**, wherein the tubular member has a liquid surface defining part to define the liquid surface at the liquid surface forming location, the tubular member transferring the aerosol source to at least the liquid surface forming location, the tubular member including a portion extending downstream of the liquid surface forming location.

7. The non-combustion type flavor inhaler according to claim **6**, wherein the liquid surface defining part is configured by an opening disposed at the liquid surface forming location.

8. The non-combustion type flavor inhaler according to claim **6**, wherein
an inner wall of the tubular member includes a step so that a hollow cross-sectional area on a downstream side of the liquid surface forming location is larger than a hollow cross-sectional area on the upstream side of the liquid surface forming location in an orthogonal cross section orthogonal to a direction from upstream toward downstream, and
the liquid surface defining part is configured by the step.

9. The non-combustion type flavor inhaler according to claim **8**, wherein
the tubular member comprises:
a first pipe extending upstream from the liquid surface forming location; and
a second pipe extending downstream at least from the liquid surface forming location,
the second pipe is arranged outside the first pipe in the orthogonal cross section, and

the step is formed by an inner wall of the first pipe, a downstream end of the first pipe, and an inner wall of the second pipe.

10. The non-combustion type flavor inhaler according to claim **6**, wherein a property of an inner wall of the tubular member is configured to change at the liquid surface forming location or on an upstream side of the liquid surface forming location.

11. The non-combustion type flavor inhaler according to claim **6**, wherein the second atomizer is arranged around the tubular member on a downstream side of the liquid surface forming location.

12. The non-combustion type flavor inhaler according to claim **1**, wherein the first atomizer and the second atomizer are provided continuously over the liquid surface forming location.

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