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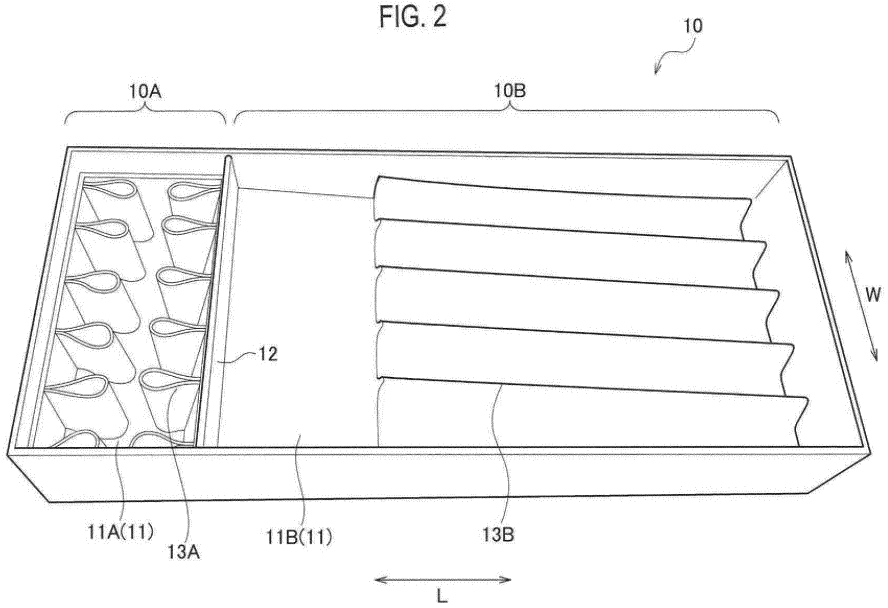
(54) FLAVOR INHALER

(57) A carbon heat source (50) and a tubular member (30) are a disposable member. The carbon heat source (50) is provided separately of the tubular member (30) that previously houses a flavor source (32). The tubular member (30) is configured by a member having more flexibility than the carbon heat source (50).

FIG. 2



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Description

[Technical Field]

[0001] The present invention relates to a flavor inhaler including a carbon heat source and a tubular member.

[Background Art]

[0002] Conventionally, a flavor inhaler that includes a heat source having a columnar shape and a tubular member having a tubular shape is known. For example, one end portion of the tubular member configures a mouthpiece, and the other end portion of the tubular member configures a supporting portion that supports the heat source.

[0003] Here, a technology is proposed in which a carbon heat source comprising 10 to 60 wt% of carbon is used as the heat source. The carbon heat source is arranged to be exposed from the tubular member (for example, Patent Literature 1).

[0004] Alternatively, regarding a flavor inhaler in which a holder that holds the heat source is repeatedly used, it is also proposed to keep the heat source and the flavor source separated of the holder (for example, Patent Literature 2).

[0005] In the above-described Patent Literature 1, the heat source is previously attached to the tubular member, and thus, a flavor ingredient moves between the heat source and an internal member of the tubular member (in this case, an ingredient comprised in the flavor source moves to the heat source), and this result is a concern over deteriorating of a flavor inhaling taste.

[0006] On the other hand, in the above-described Patent Literature 2, the holder is repeatedly used, and thus, a structure of the holder is highly complicated, and a manufacture cost of the holder is high. Therefore, the holder described in the Patent Literature 2 is not suitable for being disposable. Further, the heat source and the flavor source are kept separated of the holder, and thus, it is necessary that the heat source is mounted to the holder that houses therein the flavor source after the flavor source is mounted to the holder, and such a task is a cumbersome task for user.

[Citation List]

[Patent Literature]

[0007]

[Patent Literature 1] International Publication WO2010/146693

[Patent Literature 2] US Patent No. 5240012

[Summary of Invention]

[0008] A flavor inhaler according to a first feature comprises: a heat source having a columnar shape extending along a predetermined direction; and a tubular member previously housing a flavor source and having a tubular shape. The heat source and the tubular member are a disposable member. The heat source is provided separately of the tubular member that previously houses the flavor source. The tubular member is configured by a member having more flexibility than the heat source.

[0009] In the first feature, the tubular member is a paper tube configured by at least one of a laminated paper and a thick paper of a heat conduction member.

[0010] In the first feature, the tubular member is a simple tube paper formed by winding a sheet-like member into a tubular shape, the sheet-like member configured by at least one of a laminated paper and a thick paper of a heat conduction member.

[0011] In the first feature, an external dimension of the heat source is approximately equal to an internal dimension of the tubular member.

[0012] In the first feature, one end portion of the heat source is an ignition end portion and the other end portion of the heat source is an insertion end portion inserted into the tubular member along the predetermined direction, and the insertion end portion has an inclination surface having an inclination relative to the predetermined direction.

[0013] In the first feature, one end portion of the tubular member is a mouthpiece and the other end portion of the tubular member is a supporting portion that supports the heat source. The supporting portion has such a shape that an internal dimension of the supporting portion is smaller as it is closer to the mouthpiece.

[Brief Description of Drawings]

[0014]

[Fig. 1] Fig. 1 is a schematic drawing showing a package 100 according to a first embodiment.

[Fig. 2] Fig. 2 is a schematic drawing showing an inner case 10 according to the first embodiment.

[Fig. 3] Fig. 3 is a schematic drawing showing a tubular member 30 according to the first embodiment.

[Fig. 4] Fig. 4 is a schematic drawing showing a carbon heat source 50 according to the first embodiment.

[Fig. 5] Fig. 5 is a drawing showing a housing state of a carbon heat source 50 and a tubular member 30 according to the first embodiment.

[Fig. 6] Fig. 6 is a drawing showing a housing state of a carbon heat source 50 and a tubular member 30 according to the first embodiment.

[Fig. 7] Fig. 7 is a drawing showing an insertion state of a carbon heat source 50 according to a first modification.

[Fig. 8] Fig. 8 is a drawing showing an insertion state of a carbon heat source 50 according to a second modification.

[Fig. 9] Fig. 9 is a drawing showing an insertion state of a carbon heat source 50 according to a third modification.
[Fig. 10] Fig. 10 is a drawing showing a flavor inhaler according to a fourth modification.
[Fig. 11] Fig. 11 is a drawing showing a cup member 300 according to the fourth modification.

[Description of Embodiments]

[0015] 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.
[0016] 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]

[0017] A flavor inhaler according to an embodiment comprises: a heat source having a columnar shape extending along a predetermined direction; and a tubular member previously housing a flavor source and having a tubular shape. The heat source and the tubular member are a disposable member. The heat source is provided separately of the tubular member that previously houses the flavor source. The tubular member is configured by a member having more flexibility than the heat source.
[0018] In the embodiment, a tubular member is a disposable member that previously houses a flavor source. Therefore, it is not necessary for a user to mount a flavor source to the tubular member, and thus, it is possible to alleviate a user's task.
[0019] In the embodiment, a carbon heat source is provided separately of the tubular member that previously houses the flavor source. Therefore, an ingredient comprised in the flavor source does not move to the carbon heat source before the flavor inhaler is used. Thus, it is possible to restrain a flavor inhaling taste from deteriorating.

[First embodiment]

(Package)

[0020] A package according to a first embodiment will be described, below. Fig. 1 is a schematic drawing showing a package 100 according to the first embodiment.
[0021] As shown in Fig. 1, the package 100 has an inner case 10 and an outer case 20.
[0022] The inner case 10 has an approximately rectangular parallelepiped outer shape defined by a widthwise direction W, a longitudinal direction L and a depth direction D. The inner case 10 has a bottom surface 11 defined by the widthwise direction W and the longitudinal direction L. The inner case 10 has a box-like shape opening toward the opposite side of the bottom surface 11. For example, the inner case 10 is configured by a member (paper) having flexibility. The inner case 10 will be described in detail later (see Fig. 2).
[0023] The outer case 20 has an approximately rectangular parallelepiped outer shape defined by the widthwise direction W, the longitudinal direction L and the depth direction D. The outer case 20 has a tubular shape having a hollow 21 extending along the longitudinal direction L. The external dimension of the above-described inner case 10 is almost the same as the internal dimension of the hollow 21, and the inner case 10 is housed in the hollow 21 of the outer case 20. For example, the outer case 20 is configured by a member (paper) having flexibility. It is needless to say that various types of materials including not only a member (paper) having flexibility but also resin and metal, for example, may be employed for the package.

(Inner Case)

[0024] An inner case according to the first embodiment will be described, below. Fig. 2 is a schematic drawing showing an inner case 10 according to the first embodiment.
[0025] As shown in Fig. 2, the inner case 10 has a partition member 12 erected from the bottom surface 11. Specifically, the inner case 10 has a shape erected along the depth direction D. The partition member 12 partitions a space in the inner case 10 into a carbon heat source housing space 10A (first space) housing a carbon heat source and a tubular member housing space 10B (second space) housing a tubular member.
[0026] The carbon heat source housing space 10A has a bottom surface 11A, as the bottom surface 11, on which a carbon heat source is to be placed. The bottom surface 11A is approximately parallel to a plane defined by the widthwise direction W and the longitudinal direction L. The carbon heat source housing space 10A has a carbon heat source holder 13A that holds a carbon heat source. The carbon heat source holder 13A holds the carbon heat source so that a predetermined direction is directed toward a direction (for example, a vertical direction (depth direction D) relative to the bottom surface 11A) crossing the bottom surface 11A.
[0027] The predetermined direction is a direction from a non-insertion end portion toward an insertion end portion of the carbon heat source, for example. The insertion end portion of the carbon heat source is an end portion inserted into the tubular member. In particular, the carbon heat source holder 13A preferably holds the carbon heat source so that the direction from the non-insertion end portion toward the insertion end portion of the carbon heat source is directed toward a direction from the bottom surface 1A toward an opening. As a result, it is possible to easily insert the carbon heat source into the tubular member with a state where the carbon heat source is held by the carbon heat source holder 13A.

[0028] As described above, when the inner case 10, in particular, the carbon heat source holder 13A, is configured by a member (paper) having flexibility, it is easy to arrange the carbon heat source within the inner case 10 and hold the carbon heat source by the carbon heat source holder 13A, and also to take out the heat source by inserting the heat source into the tubular member.

[0029] The tubular member housing space 10B has a bottom surface 11B, as the bottom surface 11, on which the tubular member should be placed. The bottom surface 11B may have an inclination relative to the plane defined by the widthwise direction W and the longitudinal direction L, as described later. The tubular member housing space 10B has a tubular member holder 13B that holds the tubular member. The tubular member holder 13B holds the tubular member in a state where the tubular member is laid on its side along the longitudinal direction L.

[0030] In the first embodiment, the carbon heat source and the tubular member configure the flavor inhaler. In particular, the flavor inhaler is formed by mounted the carbon heat source to the tubular member.

(Tubular member)

[0031] The tubular member according to the first embodiment will be described, below. Fig. 3 is a schematic drawing showing the tubular member 30 according to the first embodiment.

[0032] As shown in Fig. 3, the tubular member 30 has a supporting end portion 30A and a mouthpiece side end portion 30B. The supporting end portion 30A is an end portion that holds the carbon heat source. The mouthpiece side end portion 30B is an end portion provided at a mouthpiece side of a flavor inhaler. In the first embodiment, the mouthpiece side end portion 30B configures a mouthpiece of the flavor inhaler. However, the mouthpiece of the flavor inhaler may be provided separately of the tubular member 30.

[0033] The tubular member 30 has a tubular shape including a hollow 31 extending along a direction from the supporting end portion 30A toward the mouthpiece side end portion 30B. For example, the tubular member 30 has a tubular shape or a rectangular tubular shape. The tubular member 30 previously houses the flavor source 32. The flavor source 32 is a powdery and granular tobacco leaf used in a cigarette and a snuff or a tobacco compact, for example. Alternatively, the flavor source 32 is that which is obtained by allowing a support made of a porous material such as activated carbon or a nonporous material to support various flavor ingredients such as menthol.

[0034] Here, the tubular member 30 may previously house a plurality of flavor sources. In such a case, the plurality of flavor sources may be arranged adjacent to each other, or may be arranged at intervals. The tubular member 30 may previously house a member such as a filter, in addition to the flavor source 32.

[0035] In the first embodiment, the tubular member 30 is a disposable member that previously houses the flavor source 32. The tubular member 30 is configured by a member having more flexibility than the carbon heat source. In other words, when the member configuring the tubular member 30 is in a state of the tubular member 30, it has more flexibility than the carbon heat source. Here, the flexibility means ease of widening of the hollow 31, that is, ease of deformation of the tubular member 30 in a direction from the inside the hollow 31 toward the outside the hollow 31. In such a configuration, even when a member such as the carbon heat source 50 that is not easily deformed is employed as a heat source of a flavor inhaler, it is possible for a user to easily mount the heat source to the tubular member 30.

[0036] The tubular member 30 is a paper tube configured by at least one of a laminated paper and a thick paper of a heat conduction member, for example. The tubular member 30 may be obtained by pasting a heat conduction member to a part of a paper tube configured by a thick paper.

[0037] Further, the tubular member 30 may have a single-layered structure configured by a single layer, or may have a multi-layered structure configured by a plurality of layers. Alternatively, the tubular member 30 may partially have a multi-layered structure.

[0038] For example, the tubular member 30 can be formed by winding a sheet-like member configured by at least one of a laminated paper and a thick paper of the heat conduction member into a tubular shape and adhering an overlapping portion of the sheet-like member. Such a tubular member 30 may be a spirally-wound paper tube or a flatwise paper tube. The spirally-wound paper tube is a paper tube of a type which is obtained by winding a thin paper round a shaft called a mandrel in a spiral form until a predetermined thickness is achieved. Further, the flatwise paper tube is a paper tube of a type which is obtained by winding a rectangular (rectangle)-shaped paper vertically relative to the axis of the mandrel.

[0039] When a thick paper used for the tubular member 30 has a basis weight of 100 to 300 g/m^2, a thickness of 150 to 500 μm, and a density of 0.5 g/cm^3 or more, it is possible to suitably use the thickness paper without the tubular member being deformed too greatly by its own weight.

[0040] Thus, it is not envisaged that the tubular member 30 is repeatedly used, and thus, the tubular member 30 is a simple tube paper formed by winding a sheet-like member configured by at least one of a laminated paper and a thick paper of the heat conduction member into a tubular shape. For example, the hollow 31 of the tubular member 30 has a uniform cross section area in a perpendicular cross section perpendicular to the predetermined direction. In particular, a trunk portion other than the supporting end portion 30A and the mouthpiece side end portion 30B has a uniform cross section area in the perpendicular cross section.

(Carbon heat source)

[0041] The carbon heat source according to the first embodiment will be described, below. Fig. 4 is a schematic drawing showing the carbon heat source 50 according to the first embodiment.

[0042] As shown in Fig. 4, the carbon heat source 50 has a non-insertion end portion 50A and an insertion end portion 50B. The non-insertion end portion 50A is an end portion exposed from the tubular member 30 in a state where the carbon heat source 50 is inserted into the tubular member 30. The insertion end portion 50B is an end portion inserted into the tubular member 30.

[0043] The carbon heat source 50 has a columnar shape extending along a predetermined direction from the non-insertion end portion 50A toward the insertion end portion 50B. For example, the carbon heat source 50 has a cylindrical shape or a rectangular tubular shape.

[0044] In the first embodiment, the carbon heat source 50 is provided separately of the tubular member 30 that previously houses the flavor source 32. In particular, as described later, while the tubular member 30 and the carbon heat source 50 are housed in the package 100, the tubular member 30 and the carbon heat source 50 are housed separately (see Fig. 5 and Fig. 6).

[0045] The carbon heat source 50 is configured by a mixture comprising a flammable substance. For example, the mixture comprising a flammable substance includes a carbon material, a nonflammable additive, a binder (organic binder or inorganic binder), and water. As the carbon material, that which is obtained by removing a volatile impurity through a heat treatment, etc., is preferably used.

[0046] The carbon heat source 50 preferably comprises a carbonaceous material in a range of 10 wt% to 99 wt% when the weight of the carbon heat source 50 is 100 wt%. In view of a burning characteristic such as supplying of a sufficient heat amount and tightening of ash, the carbon heat source 50 preferably comprises a carbonaceous material in a range of 30 wt% to 70 wt%, and more preferably comprises a carbonaceous material in a range of 40 wt% to 50 wt%.

[0047] Examples of the organic binder may include a mixture including at least one of CMC (carboxymethyl cellulose), alginate, EVA, PVA, PVAC and saccharides.

[0048] Examples of the inorganic binder may include a mineral-based binder such as a purified bentonite or a silica-based binder such as colloidal silica, water glass, and calcium silicate.

[0049] For example, in view of a flavor, when the weight of the carbon heat source 50 is 100 wt%, the binder preferably comprises 1 wt% to 10 wt% of CMC, and comprises 1 wt% to 8 wt% of CMC.

[0050] Examples of the nonflammable additive may include a carbonate or an oxide comprising sodium, potassium, calcium, magnesium, and silicon. The carbon heat source 50 may comprise 40 wt% to 89 wt% of nonflammable additive when the weight of the carbon heat source 50 is 100 wt%. Further, when calcium carbonate is used as the nonflammable additive, the carbon heat source 50 preferably comprises 40 wt% to 55 wt% of nonflammable additive.

[0051] In order to improve a burning characteristic, the carbon heat source 50 may comprise 1 wt% or less of alkali metal salts such as sodium chloride when the weight of the carbon heat source 50 is 100 wt%.

[0052] In the first embodiment, the carbon heat source 50 is a combustion body, and thus, the non-insertion end portion 50A configures an ignition end portion. The carbon heat source 50 has a single hollow 51 extending along a predetermined direction from the non-insertion end portion 50A toward the insertion end portion 50B. Because of the single hollow 51, it is possible to restrain variation between an amount of heat supplied during inhalation (puffing) and an amount of heat supplied during non-inhalation (puffing) to ensure a stable heat amount. The non-insertion end portion 50A and the insertion end portion 50B may have the same composition or shape, or may have a different composition or shape. For example, the non-insertion end portion 50A may have a notch 52 in communication with the hollow 51 to facilitate ignition of the carbon heat source 50. Even when the non-insertion end portion 50A and the insertion end portion 50B have a different composition or shape, it is possible to hold the carbon heat source 50 in the heat source housing space 10A while the carbon heat source 50 previously is directed toward a predetermined direction, and thus, it is possible to prevent a user from inserting the carbon heat source 50 in a wrong direction.

[0053] Here, the hollow 51 has a cross section area in a perpendicular cross section perpendicular to the predetermined direction. The cross section area of the hollow 51 is preferably 1.77 mm^2 or more. A single hollow 51 is preferably formed in the carbon heat source 50. The single hollow 51 is preferably arranged at an approximately center of the carbon heat source 50 in the perpendicular cross section.

[0054] In the first embodiment, the external dimension of the carbon heat source 50 is approximately equal to the internal dimension of the tubular member 30 (hollow 31). In particular, at least the external dimension of the trunk portion other than the non-insertion end portion 50A and the insertion end portion 50B is approximately equal to the internal dimension of the tubular member 30 (hollow 31) or equal to or more than the internal dimension of the tubular member 30 (hollow 31).

[0055] Here, it is preferable that when the carbon heat source 50 being inserted into the tubular member 30, the external dimension of the trunk portion of the carbon heat source 50 is larger than the internal dimension of the tubular member 30 (hollow 31) within a range of being capable of holding the carbon heat source 50 while the tubular member 30 is deformed in a circumferential direction without the tubular member 30 being split nor broken. For example, when a single-layered thick paper tube is employed as the tubular member 30, a difference be-

tween the external dimension of the trunk portion of the carbon heat source 50 and internal dimension of the tubular member 30 (hollow 31) is preferably less than 0.2 mm, is more preferably more than 0.05 mm and equal to or less than 0.10 mm. Because of such a configuration, when a user inserts the carbon heat source 50 into the tubular member 30, it is easy to insert the carbon heat source 50 and possible to restrain the carbon heat source 50 from dropping from the tubular member 30.

(Housing state of carbon heat source and tubular member)

[0056] A housing state of the carbon heat source and the tubular member according to the first embodiment will be described, below. Fig. 5 and Fig. 6 are drawings showing the housing state of the carbon heat source 50 and the tubular member 30 according to the first embodiment.

[0057] As shown in Fig. 5 and Fig. 6, the carbon heat source 50 is arranged in the carbon heat source housing space 10A partitioned by the partition member 12. The carbon heat source 50 is held by the carbon heat source holder 13A so that the predetermined direction is directed toward a direction (for example, the depth direction D) crossing the bottom surface 11A, as described above. In particular, the carbon heat source 50 is held so that the insertion end portion 50B faces the opposite side of the bottom surface 11A.

[0058] Here, the carbon heat source holder 13A preferably has a structure to hold the carbon heat source 50 so that the insertion end portion 50B protrudes from an upper end of the carbon heat source holder 13A. A length with which the insertion end portion 50B of the carbon heat source 50 protrudes from the upper end of the carbon heat source holder 13A is preferably approximately equal to a length with which the insertion end portion 50B of the carbon heat source 50 should be inserted into the tubular member 30.

[0059] In the first embodiment, a height H1 of the carbon heat source 50 is greater than a height H2 of the carbon heat source holder 13A in the depth direction D. A difference P between the height H1 and the height H2 is approximately equal to the length with which the insertion end portion 50B should be inserted into the tubular member 30. The height H1 is a length of the carbon heat source 50 in the predetermined direction from the non-insertion end portion 50A toward the insertion end portion 50B. The difference P is a length with which the insertion end portion 50B protrudes from the upper end of the carbon heat source holder 13A.

[0060] As shown in Fig. 5 and Fig. 6, the tubular member 30 is arranged in the tubular member housing space 10B partitioned by the partition member 12. As described above, the tubular member 30 is held by the tubular member holder 13B in a state where the tubular member 30 is laid on its side along the longitudinal direction L.

[0061] In the first embodiment, the bottom surface 11B may be inclined relative to the plane defined by the widthwise direction W and the longitudinal direction L, as described later. A length of the tubular member holder 13B is preferably shorter than a length of the tubular member 30 in the longitudinal direction L. This makes it easy to take out the tubular member holder 13B from the inner case 10.

(Operation and Effect)

[0062] In the first embodiment, the tubular member 30 is a disposable member that previously houses the flavor source 32. Therefore, it is not necessary for a user to mount the flavor source 32 to the tubular member 30, and thus, it is possible to alleviate a user's task.

[0063] In an embodiment, the carbon heat source 50 is provided separately of the tubular member 30 that previously houses the flavor source 32. Therefore, an ingredient comprised in the flavor source 32 does not move to the carbon heat source 50 before the flavor inhaler is used, and it is possible to restrain a flavor inhaling taste from deteriorating.

[First Modification]

[0064] A first modification of the first embodiment will be described, below. Description proceeds with a particular focus on a difference from the first embodiment, below.

[0065] In the first modification, as shown in Fig 7, the insertion end portion 50B has a shape that an external dimension of the insertion end portion 50B decrease from the non-insertion end portion 50A toward the insertion end portion 50B. The external dimension of the insertion end portion 50B at an end of the insertion end portion 50B is smaller than an internal dimension of the supporting end portion 30A at an end of the supporting end portion 30A. However, the external dimension of the trunk portion other than the non-insertion end portion 50A and the insertion end portion 50B is approximately equal to the internal dimension of the tubular member 30 (supporting end portion 30A).

[0066] Thus, the insertion end portion 50B has such a shape that the external dimension of the insertion end portion 50B decrease from the non-insertion end portion 50A toward the insertion end portion 50B, and thus, it is easy to insert the carbon heat source 50 into the tubular member 30. The insertion end portion 50B may have such a tapered shape that the external dimension of the insertion end portion 50B gradually changes, or may have such a shape that only an external dimension at the end of the insertion end portion 50B is small.

[Second Modification]

[0067] A second modification of the first embodiment will be described, below. Description proceeds with a particular focus on a difference from the first embodiment,

below.

[0068] In the second modification, as shown in Fig 8, the supporting end portion 30A has a shape that an internal dimension of the supporting end portion 30A decreases from the supporting end portion 30A toward the mouthpiece side end portion 30B. The internal dimension of the supporting end portion 30A at an end of the supporting end portion 30A is larger than the external dimension of the insertion end portion 50B at an end of the insertion end portion 50B. However, the internal dimension of the tubular member 30 in at least part of a predetermined length (length with which the carbon heat source 50 should be inserted) from the supporting end portion 30A of the tubular member 30 is approximately equal to the external dimension of the trunk portion other than the non-insertion end portion 50A and the insertion end portion 50B.

[0069] Thus, the supporting end portion 30A has such a shape that the internal dimension of the supporting end portion 30A decrease from the supporting end portion 30A toward the mouthpiece side end portion 30B, and thus, it is easy to insert the heat source 50 into the tubular member 30. The supporting end portion 30A may have such a tapered shape that the internal dimension of the supporting end portion 30A gradually changes, or may have such a shape that only an internal dimension at the end of the supporting end portion 30A is large.

[Third Modification]

[0070] A third modification of the first embodiment will be described, below. Description proceeds with a particular focus on a difference from the first embodiment, below.

[0071] In the third modification, as shown in Fig. 9, the supporting end portion 30A of the tubular member 30 is configured by an outer tubular member 35 and an inner tubular member 36. An external dimension of the insertion end portion 50B at an end of the insertion end portion 50B is approximately equal to an internal dimension of the outer tubular member 35 at an end of the outer tubular member 35. The inner tubular member 36 is provided inside the outer tubular member 35. Here, a length Q from an end of the outer tubular member 35 to an end of the inner tubular member 36 is preferably equal to a length with which the insertion end portion 50B of the heat source 50 should be inserted into the outer tubular member 35. Such a configuration allows the inner tubular member 36 to function as a regulation portion that regulates insertion of the heat source 50, and thus, it is possible to insert the heat source 50 into the outer tubular member 35 with an appropriate insertion length irrespective of a length of the insertion end portion 50B of the heat source 50 protruded from the upper end of the heat source holder 13A. Further, it is possible to insert the heat source 50 into the outer tubular member 35 with an appropriate insertion length without a need of making the outer tubular member 35 and the heat source holder 13A contact each other during insertion.

[Fourth Modification]

[0072] A fourth modification of the first embodiment will be described, below. Description proceeds with a particular focus on a difference from the first embodiment, below.

[0073] Although not particularly mentioned in the first embodiment, in the fourth modification, as shown in Fig. 10, the flavor inhaler includes a heat conduction member 200 and a cup member 300 in addition to the tubular member 30 and the heat source 50.

[0074] The heat conduction member 200 is provided on an inner surface of the tubular member 30 at the supporting end portion 30A of the tubular member 30. The heat conduction member 200 is preferably formed of a metal material having an excellent heat conductivity, and is configured of aluminum, for example. The length of the heat conduction member 200 is preferably at least longer than the length of the cup member 300 in the predetermined direction. That is, the heat conduction member 200 projects toward the mouthpiece side end portion 30B side relative to the cup member 300. The length of the heat conduction member 200 may be the same as the length of the tubular member 30.

[0075] The cup member 300 has a cup shape, houses the flavor source 32 (here, a flavor source), and holds the heat source 50. The cup member 300 is configured to be inserted into the supporting end portion 30A of the tubular member 30. In particular, the cup member 300 is configured by a tubular side wall 310 and a bottom plate 320 covering one opening configured by the side wall 310. The flavor source 32 (here, a flavor source) and the heat source 50 are inserted into the cup member 300 from one opening configured by the side wall 310. The bottom plate 320 has a plurality of air holes 320A through which air passes.

[0076] Here, the flavor source 32 (here, a flavor source) is configured by a powdery and granular tobacco leaf, for example. In such a case, the size of the air hole 320A is smaller than a particle diameter of the tobacco leaf.

[0077] In the fourth modification, the thickness of the side wall 310 is preferably 0.1 mm or less. As a result, a heat capacity of the side wall 310 is small, and the heat generated from the heat source 50 is efficiently transmitted to the flavor source. Further, the side wall 310 is preferably configured by SUS (for example, SUS 430). As a result, even when the thickness of the side wall 310 is 0.1 mm or less, it is possible to obtain a sufficient strength as the strength of the side wall 310 and possible to maintain the shape of the cup member 300. The bottom plate 320 is preferably configured by the same member (for example, SUS 430) as the side wall 310.

[Other Embodiments]

[0078] The present invention is explained through the above embodiment, but it must not be assumed that this invention is limited by the statements and the drawings constituting a part of this disclosure. From this disclosure, various alternative embodiments, examples, and operational technologies will become apparent to those skilled in the art.

[0079] In the embodiments, the package 100 (the inner case 10 and the outer case 20) has an approximately rectangular parallelepiped outer shape. However, the embodiments are not limited thereto. For example, the package 100 may be configured by a box having the heat source housing space 10A and the tubular member housing space 10B and by a lid attached to the box by a hinge, etc., in such a way as capable of opening and closing. Alternatively, the package 100 may be configured by a box having the heat source housing space 10A and the tubular member housing space 10B and by a lid provided separately of the box.

[0080] Although not particularly mentioned in the embodiments, the dimension of the package 100 in the depth direction D is preferably smaller than the dimension of the package 100 in the longitudinal direction L and the widthwise direction W. However, the embodiments are not limited thereto.

[0081] Although not particularly mentioned in the embodiments, the dimension of the package 100 in the longitudinal direction L is preferably smaller than the dimension of the package 100 in the widthwise direction W. However, the embodiments are not limited thereto.

[0082] In the embodiments, the height H1 of the heat source 50 is greater than the height H2 of the heat source holder 13A in the depth direction D. However, the embodiments are not limited thereto. The heat source holder 13A may have a structure to hold the heat source 50 so that the insertion end portion 50B protrudes from an upper end of the heat source holder 13A. Therefore, the inner case 10 may have such a structure that the bottom surface 11A rises along the depth direction D in conjunction with an operation where the inner case 10 is drawn from the outer case 20. In such a case, when the inner case 10 is drawn from the outer case 20, the heat source holder 13A holds the heat source 50 so that the insertion end portion 50B protrudes from the upper end of the heat source holder 13A.

[0083] In the embodiments, a case in which the heat source 50 is placed on the bottom surface 11 is described; however, the embodiment is not limited thereto. For example, it may be possible that a space is provided between the bottom surface 11 and the heat source 50 and that the heat source 50 is supported only by the heat source holder 13A.

[0084] In the embodiments, a case is described where the carbon heat source 50 has the single hollow 51 extending along a predetermined direction from the non-insertion end portion 50A toward the insertion end portion 50B. However, the embodiment is not limited thereto. For example, the carbon heat source 50 may have a plurality of hollows extending along a predetermined direction from the non-insertion end portion 50A toward the insertion end portion 50B, or may not have such hollows. Further, it is possible to optionally change the shape of such hollows.

[0085] In the embodiments, a case is described where the tubular member 30 of the flavor inhaler is a paper tube configured by at least one of a laminated paper and a thick paper of a heat conduction member. However the embodiment is not limited thereto. For example, as the tubular member 30, in order to impart burning resistance, that which is made into paper by adding magnesium hydroxide or aluminum hydroxide into cellulose pulp, or a multi-layered sheet obtained by coating calcium carbonate, polyvinyl alcohol, etc., may be used.

[0086] In the embodiments, a case is described where the heat source of the flavor inhaler is the carbon heat source. However, the embodiments are not limited thereto, and any material that releases and absorbs a volatile ingredient may be suitably employed. For example, instead of the carbon heat source 50, a formed product obtained by molding a mixture comprising a powdery and granular tobacco by a technique such as extrusion molding, tablet molding, and mold injection may be employed. In such a case, the tobacco compact acts also as a function of the flavor source, and thus, arrangement of the flavor source 32 in the inside of the tubular member 30 may be optional. In such a case also, when the tobacco compact is provided separately of the tubular member, in a state where the flavor inhaler is before being used, it is possible to restrain an ingredient from moving between the tobacco compact and the tubular member 30 or a member housed inside the tubular member 30 (in this case, an ingredient comprised in the tobacco compact from moving into the tubular member or the member housed inside the tubular member), and it is possible to restrain a flavor inhaling taste from deteriorating.

[0087] In addition, the entire content of Japanese Patent Application No. 2013-47284 (filed on March 8, 2013) is incorporated in the present specification by reference.

[Industrial Applicability]

[0088] According to the present invention, it is possible to provide a flavor inhaler with which it is possible to alleviate a user's task and restrain a flavor inhaling taste from deteriorating.

Claims

1. A flavor inhaler comprising: a heat source having a columnar shape extending along a predetermined direction; and a tubular member previously housing a flavor source and having a tubular shape, wherein the heat source and the tubular member are a dis-

posable member,
the heat source is provided separately of the tubular member that previously houses the flavor source, and
the tubular member is configured by a member having more flexibility than the heat source.

2. The flavor inhaler according to claim 1, wherein the tubular member is a paper tube configured by at least one of a laminated paper and a thick paper of a heat conduction member.

3. The flavor inhaler according to claim 1, wherein the tubular member is a simple tube paper formed by winding a sheet-like member into a tubular shape, the sheet-like member configured by at least one of a laminated paper and a thick paper of a heat conduction member.

4. The flavor inhaler according to claim 1, wherein an external dimension of the heat source is approximately equal to an internal dimension of the tubular member.

5. The flavor inhaler according to claim 4, wherein
one end portion of the heat source is an ignition end portion and the other end portion of the heat source is an insertion end portion inserted into the tubular member along the predetermined direction, and
the insertion end portion has an inclination surface having an inclination relative to the predetermined direction.

6. The flavor inhaler according to claim 4, wherein
one end portion of the tubular member is a mouthpiece and the other end portion of the tubular member is a supporting portion that supports the heat source, and
the supporting portion has such a shape that an internal dimension of the supporting portion is smaller as it is closer to the mouthpiece.

FIG. 1

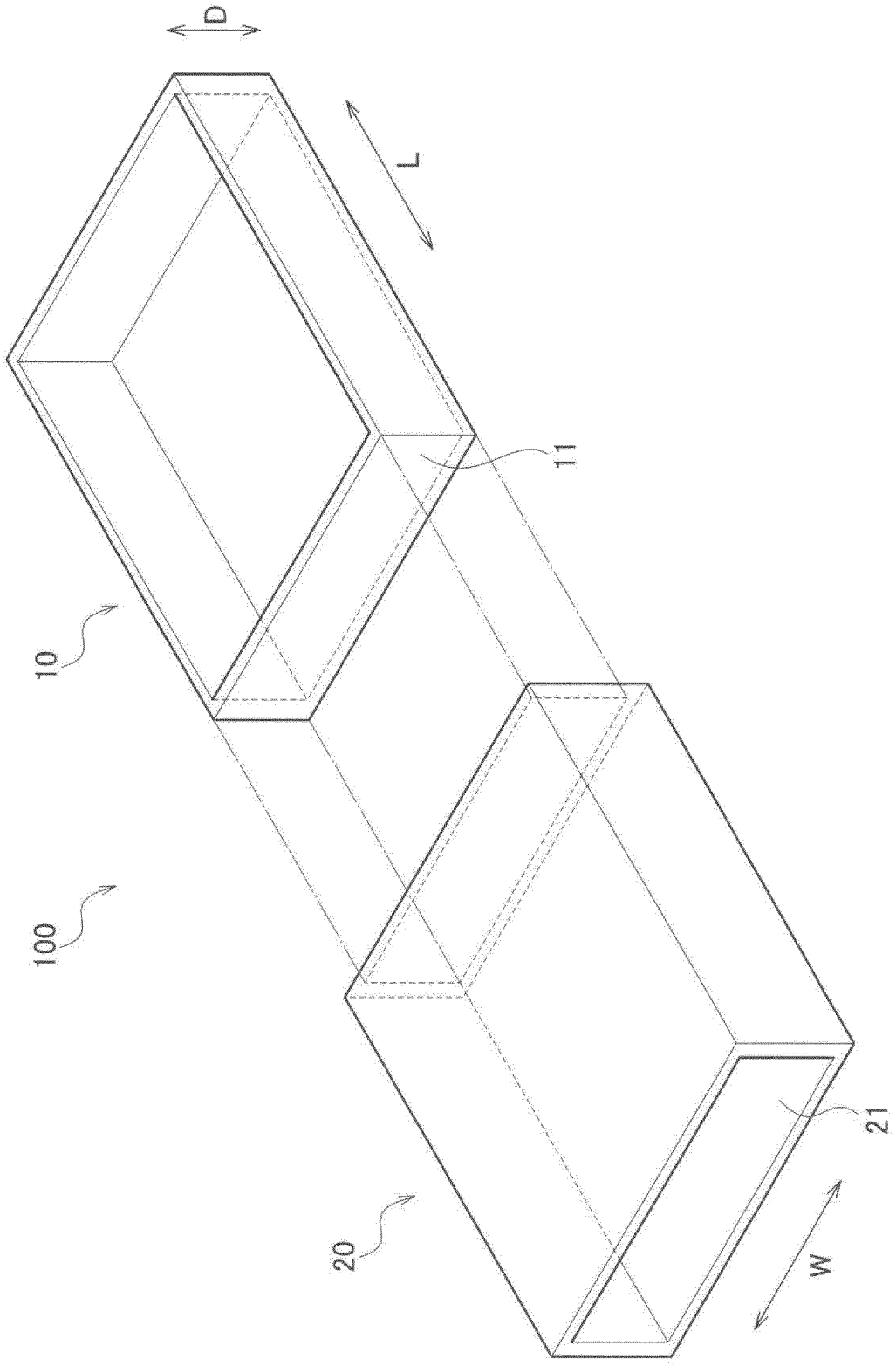


FIG. 2

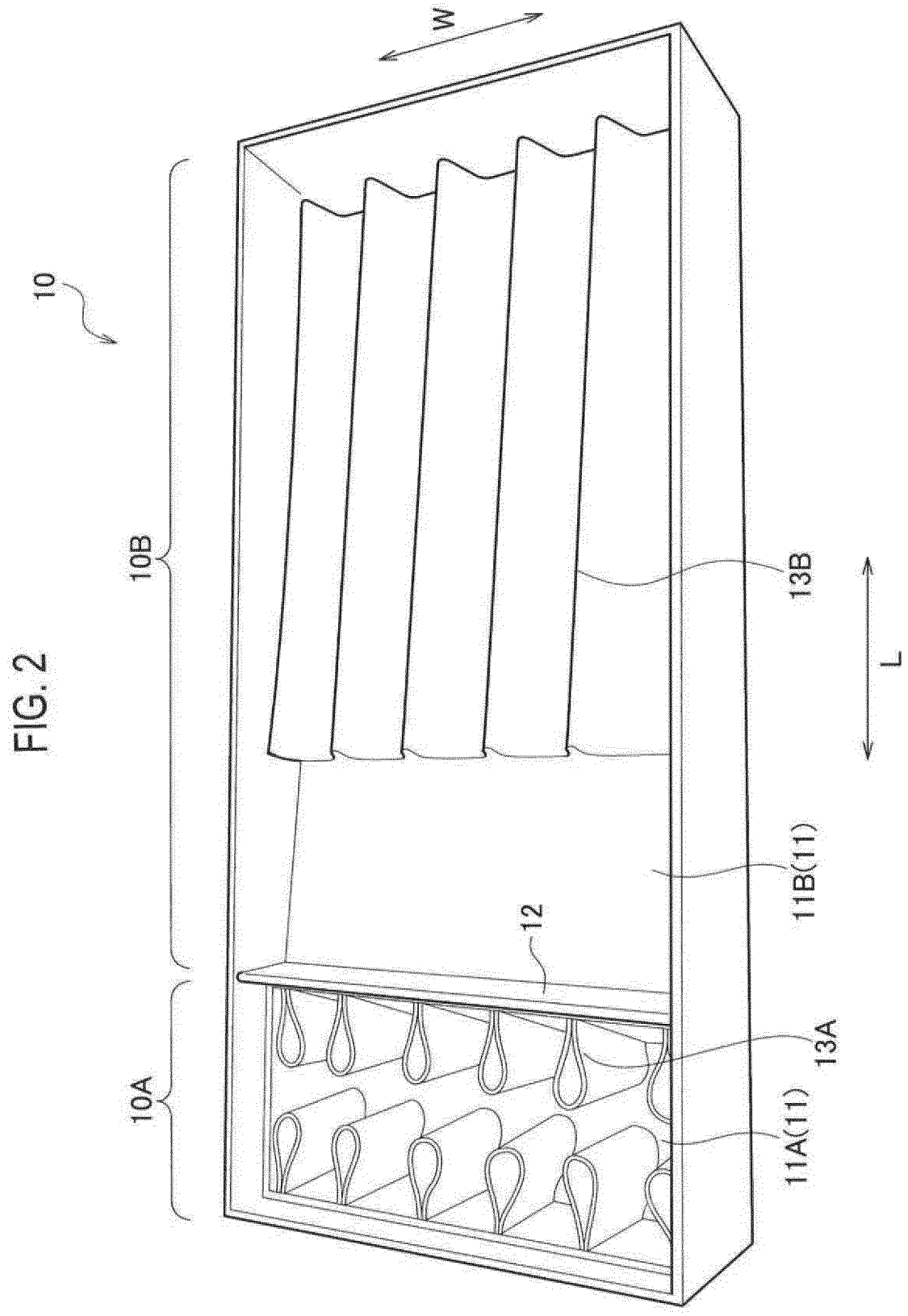


FIG. 3

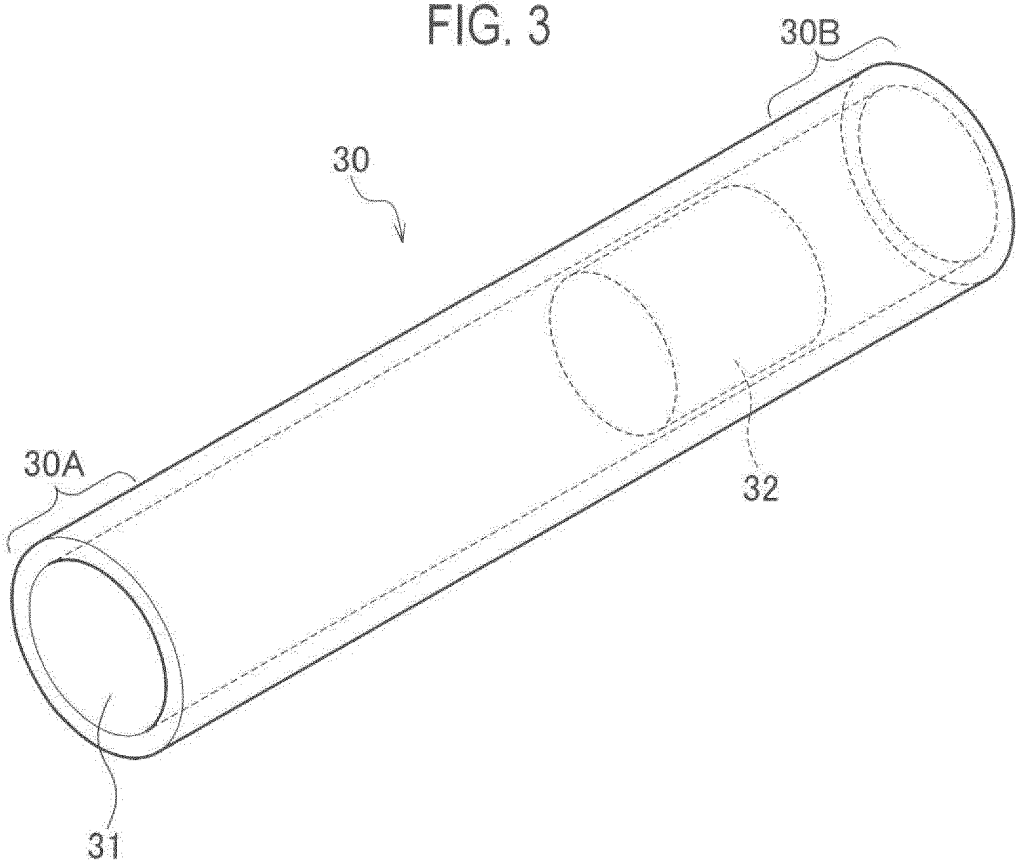


FIG. 4

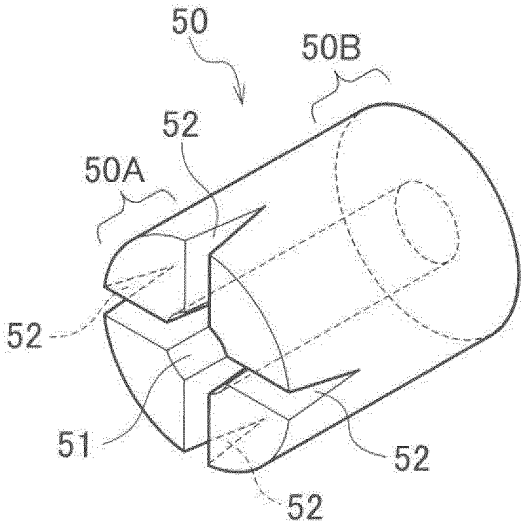


FIG. 5

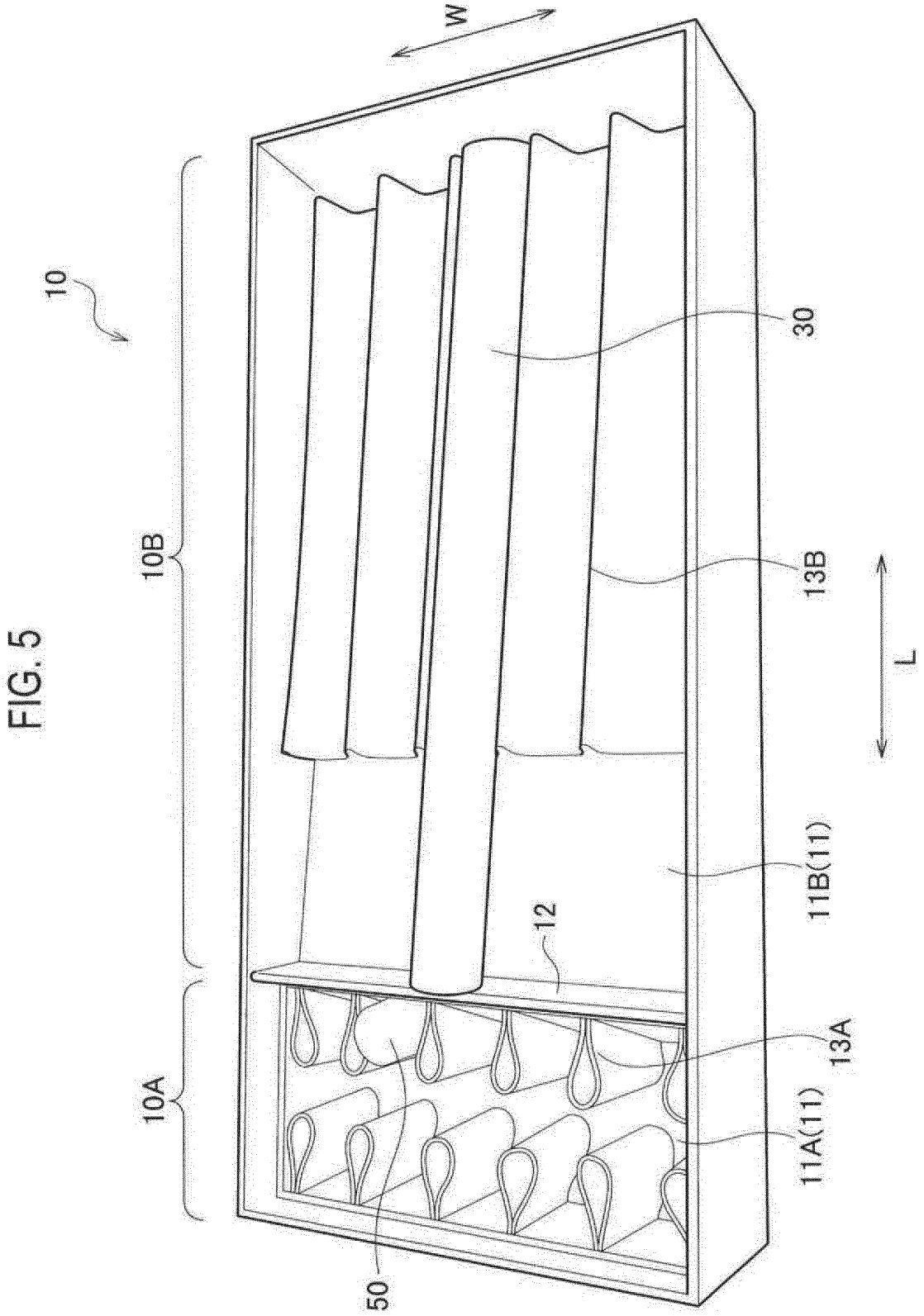


FIG. 6

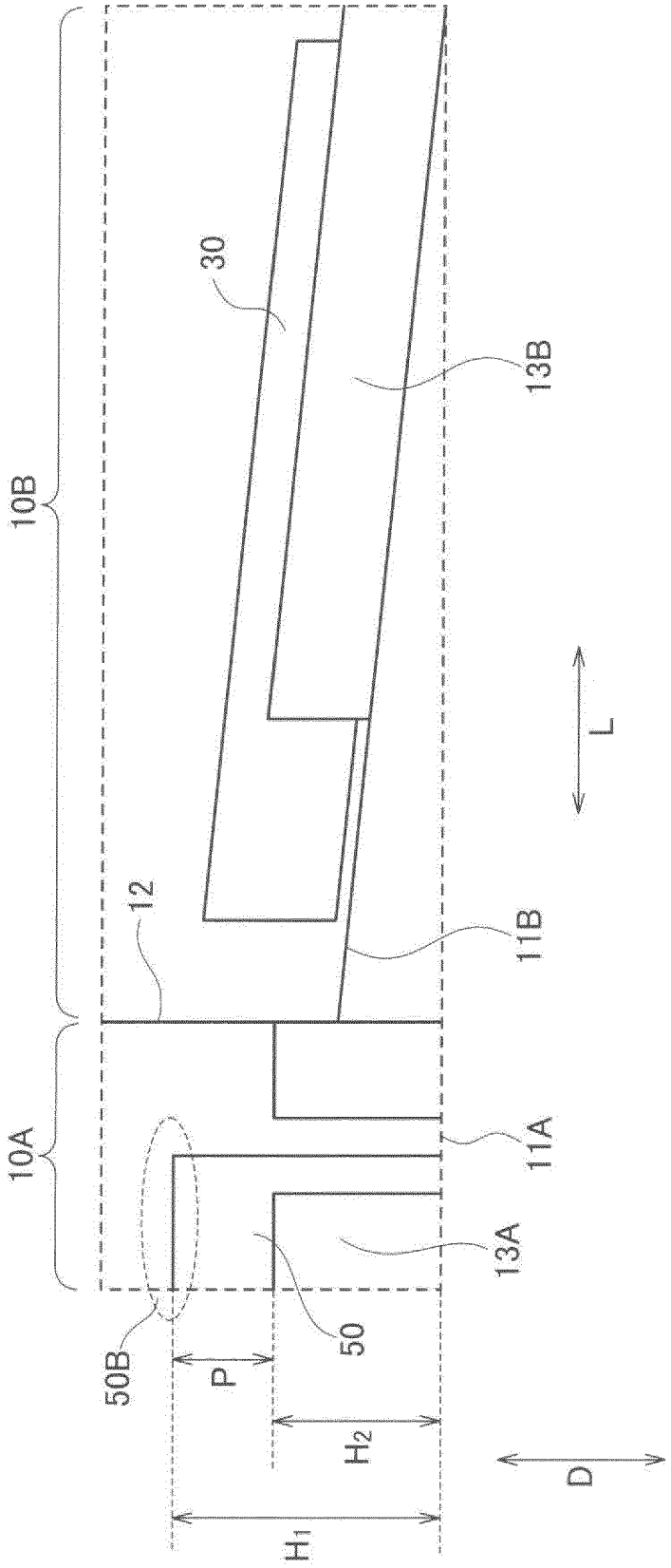


FIG. 7

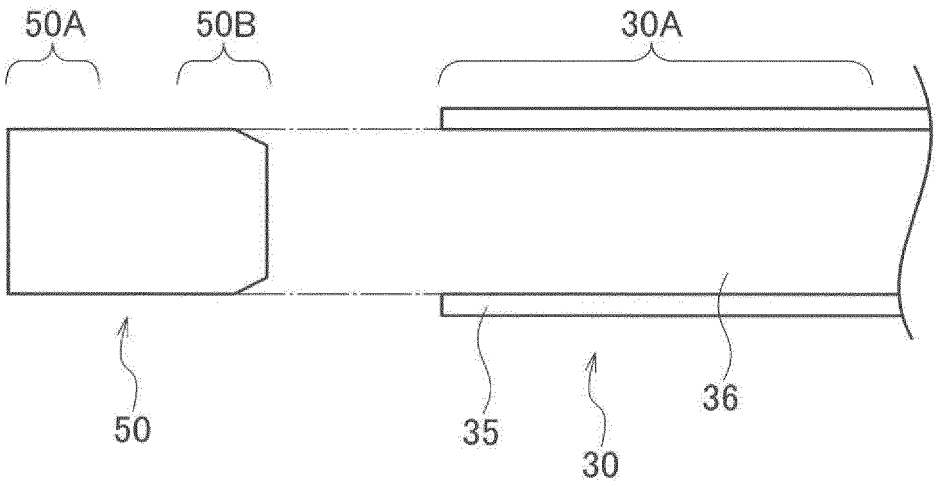


FIG. 8

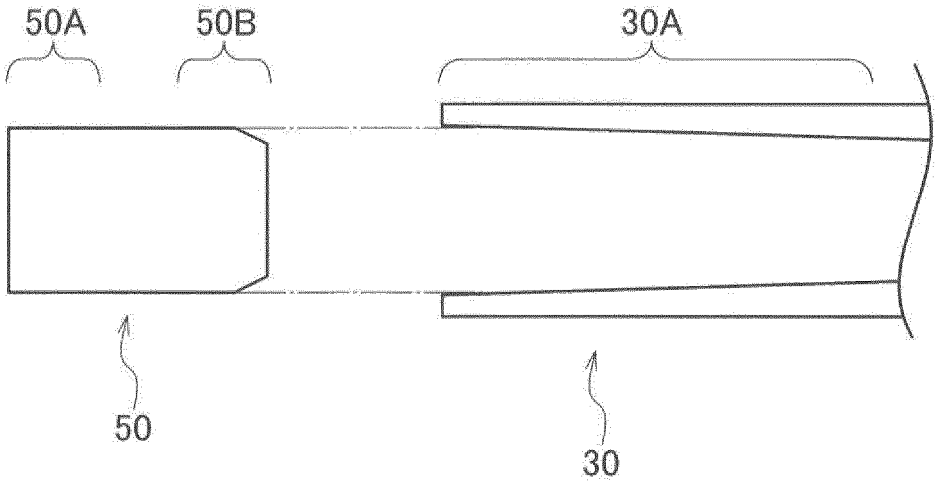


FIG. 9

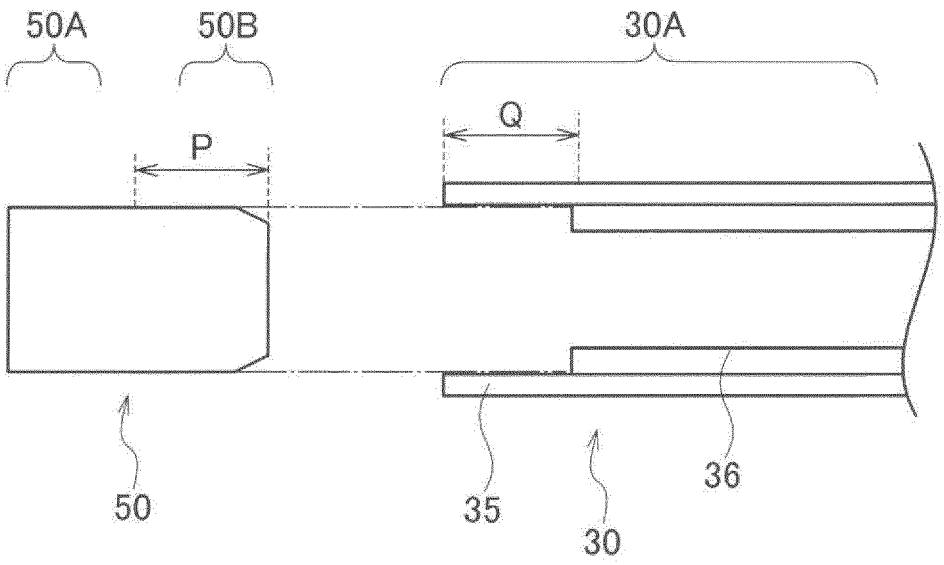


FIG. 10

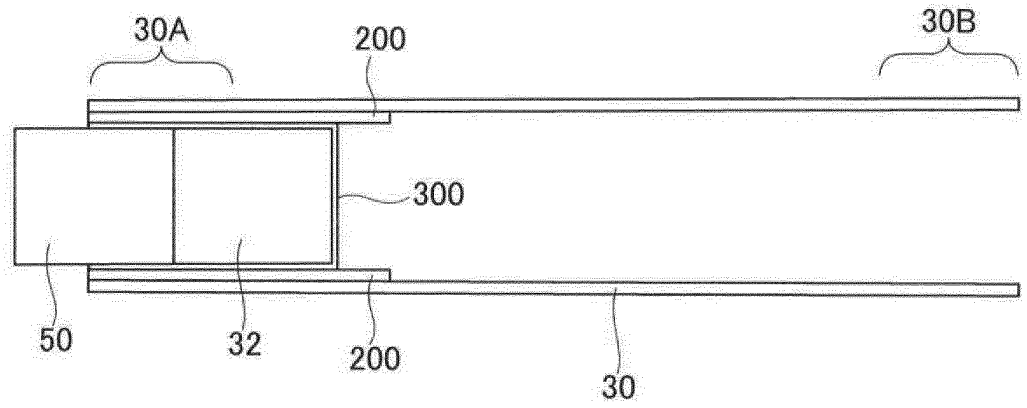
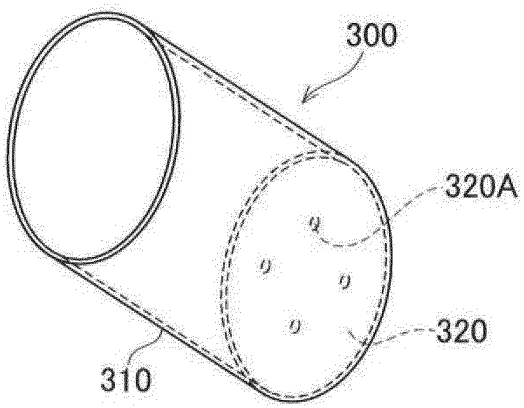


FIG. 11



INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2014/055273

A. CLASSIFICATION OF SUBJECT MATTER
A24F47/00(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)
A24F47/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2014
Kokai Jitsuyo Shinan Koho 1971-2014 Toroku Jitsuyo Shinan Koho 1994-2014

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2011/118024 A1 (Japan Tobacco Inc.), 29 September 2011 (29.09.2011), paragraphs [0018] to [0024]; fig. 1, 6, 10 & US 2013/0019888 A1 & EP 2550879 A1	1-6
A	JP 2010-535530 A (Philip Morris Products S.A.), 25 November 2010 (25.11.2010), paragraph [0024] & US 2009/0065011 A1 & EP 2173204 A & WO 2009/022232 A2	1-6
A	WO 2012/090294 A1 (Japan Tobacco Inc.), 05 July 2012 (05.07.2012), entire text; all drawings (Family: none)	1-6

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

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
16 May, 2014 (16.05.14)	03 June, 2014 (03.06.14)
Name and mailing address of the ISA/ Japanese Patent Office	Authorized officer
Facsimile No.	Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2014/055273

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2012/107414 A1 (S.A.S.C.AG), 16 August 2012 (16.08.2012), entire text; all drawings & DE 102011010532 A1 & AU 2012215570 A	1-6
A	JP 2003-230373 A (Jiro HIROSE), 19 August 2003 (19.08.2003), entire text; all drawings (Family: none)	1-6
A	JP 62-262981 A (R.J. Reynolds Tobacco Co.), 16 November 1987 (16.11.1987), entire text; all drawings & US 4765347 A & EP 244684 A2 & BR 8702304 A & CN 87103178 A	1-6

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- WO 2010146693 A **[0007]**
- US 5240012 A **[0007]**
- JP 2013047284 A **[0087]**