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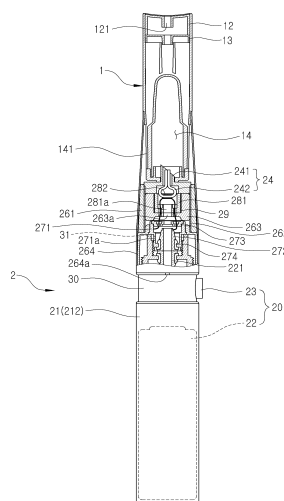
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(54) ELECTRONIC CIGARETTE*(57) Abstract*

The present disclosure is directed to an electronic cigarette which prevents liquid from leaking from a reservoir without needing a cotton ball or sponge, which can store a large amount of liquid, and which allows easy fill and replacement of the liquid, and specially directed to the electronic cigarette includes an inhalation portion including a case in which an inlet is formed at one end; a reservoir in which an injection port having a viscosity corresponding to a viscosity of the liquid is formed so as to inject the liquid having a predetermined viscosity but to prevent the injected liquid from flowing outward; and a passageway formed between the case and the reservoir that connects to the inlet where the reservoir is inserted into the case; and an atomizer including a power supply portion having an intake formed in one part connected with the passageway to draw in air, a battery for supplying power and a switch for connecting or disconnecting power to the battery, an absorption portion formed with an outer diameter of one end less than the injection port and inserted into the injection port to absorb the liquid received in the inhalation portion, and a combustion portion supplied with power from the battery to vaporize the liquid absorbed in the absorption portion, the atomizer being installed between the inhalation portion and the power supply portion; when the absorption portion is inserted into the injection port while an interior of the inhalation portion is filled with liquid, a gap is formed between the injection port and the absorption portion through which air flows into the gap, the absorption portion absorbs the liquid received in the inhalation portion, the combustion portion vaporizes the absorbed liquid in the atomizer to produce smoke, and when inhaled from the inlet, the intake inhales outside air and the vaporized smoke and the inhaled outside air are discharged through the inlet, as achieved by the electronic cigarette. Accordingly, it has the advantages of storing a large amount of liquid while preventing the liquid from leaking from the reservoir, preventing overfeeding and underfeeding, preventing burning of the wick of the combustion portion, and allowing easy filling or replacement of liquid.

Representative Drawing - Fig.4*Scope of Claims*

Claim 1

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Claim 2

An electronic cigarette includes an atomizer including an absorption portion for absorbing liquid, a combustion portion for vaporizing liquid absorbed in the absorption portion to produce smoke; a power supply portion for supplying power to the combustion portion; and an inhalation portion including a reservoir having a space formed therein to receive the liquid, an inlet formed by extending one end of the reservoir, a guide groove formed in a side of the reservoir, and a passageway connecting the inlet to the guide groove, the inhalation portion being removable from the atomizer; wherein, in a state the inhalation portion is inserted into the atomizer, a portion of the absorption portion is inserted into the space of the reservoir to absorb the liquid received in the reservoir, wherein the combustion portion vaporizes the absorbed liquid to produce smoke, and wherein the inlet is formed to inhale the vaporized smoke and allow the inhaled smoke to escape through the inlet,

further comprising an absorber member, the absorber member being inserted through the combustion portion into the absorption portion to facilitate absorption of liquid in the combustion portion and to facilitate vaporization of the absorbed liquid in the combustion portion to produce smoke.

Claim 3

The electronic cigarette of claim 2, wherein one end of the absorption portion is sloped to further facilitate the absorption of liquid received from the inhalation portion.

Claim 4

Deleted

*Specification**Technical Field of the Invention*

[0001] The present invention relates to an electronic cigarette in which smoke generated by combustion of a nicotine-containing liquid is inhaled by a user like a cigarette, and more particularly to an electronic cigarette that prevents liquid from leaking from a reservoir without needing a cotton ball or sponge, that can store a large amount of liquid, that can be easily filled or replaced, and that can be easily checked for liquid level.

Prior Art

[0002] A conventional electronic cigarette comprises a reservoir for storing nicotine-containing liquid and an atomizer for burning the liquid to produce smoke.

[0003] At this time, a cotton ball or sponge is inserted into the reservoir to prevent the liquid from spilling out, but due to the viscosity of the liquid, it is not evenly absorbed by the cotton ball or sponge. As a result, the liquid is concentrated in one place, causing a problem of excessive liquid supply, in particular, the liquid filled in the upper part of the cotton or sponge is delayed in coming down, and the liquid cannot be completely consumed. In particular, if a large amount of liquid is filled in the reservoir when refilling the liquid, the liquid drips down, and furthermore, there is a problem that the liquid is crowded in the atomizer and does not burn properly, or the liquid leaks and flows outside the electronic cigarette. In addition, since cotton balls or sponges are inserted into the reservoir, it is not possible to store a large amount of liquid, so it is necessary to refill the liquid frequently.

[0004] To solve these problems, the electronic cigarette of the previously filed public utility model No. 2009-9075 omits a sponge or cotton ball and installs a cylinder and a piston in a screw-type combination in the reservoir. However, to smoke with an electronic cigarette, the piston must be advanced by rotating the inhaling part, which is cumbersome to do every time you smoke. In particular, since the piston is a disk type, there is also a problem that the liquid is not sprayed when the piston rotates together.

- [0005] In addition, it is not possible to check the remaining amount of liquid, so it is necessary to remove the reservoir where the liquid is stored frequently to check it. That is, if someone smokes while the liquid is depleted, the absorption member that serves as a wick may burn out, so there is a problem that the liquid level must be checked frequently.

Detailed Description of the Invention

Technical Problem to be Solved by the Invention

- [0006] The present disclosure is designed to solve the above problems and aims to provide an electronic cigarette that can store a large amount of liquid while preventing the liquid from leaking out of a reservoir by forming an injection port in the reservoir to correspond to the viscosity of the liquid, preventing an excessive amount of liquid from being supplied or only a small amount below a predetermined amount, preventing a wick in a combustion portion from being burned, while at the same time being able to easily fill or replace the liquid, and easily checking the remaining amount of liquid.

Structure and Operation of the Invention

- [0007] The object of the present disclosure is achieved by an electronic cigarette includes an atomizer including an absorption portion for absorbing liquid, a combustion portion for vaporizing liquid absorbed in the absorption portion to produce smoke, a power supply portion for supplying power to the combustion portion; and an inhalation portion including a reservoir having a space formed therein to receive the liquid, an inlet formed by extending one end of the reservoir, a guide groove formed in a side of the reservoir, and a passageway connecting the inlet to the guide groove, the inhalation portion being removable from the atomizer; wherein, in a state the inhalation portion is inserted into the atomizer, a portion of the absorption portion is inserted into the space of the reservoir to absorb the liquid received in the reservoir, wherein the combustion portion vaporizes the absorbed liquid to produce smoke, and wherein the inlet is formed to inhale the vaporized smoke and allow the inhaled smoke to escape through the inlet.
- [0008] In addition, the electronic cigarette may further include an absorber member, the absorber member being inserted through the combustion portion into the absorption portion to facilitate absorption of liquid in the combustion portion and to facilitate vaporization of the absorbed liquid in the combustion portion.
- [0009] Also, one end of the absorption portion is sloped to further facilitate the absorption of liquid received from the inhalation portion.
- [0010] The electronic cigarette may further include a mesh that absorbs and retains the liquid around a periphery of the combustion portion, to prevent the liquid absorbed in the absorption portion from leaking into an intake, and to prevent the liquid from blocking the intake.

Effects of the Invention

- [0011] The present disclosure has the advantage of preventing leakage of liquid from the reservoir in which liquid is stored without needing a cotton ball or sponge, has the advantage of making it easy to combine an inhalation portion with an atomizer because there is no leakage of liquid, and has the advantage of storing a larger amount of liquid because no cotton ball or sponge is used. In addition, since there is no phenomenon of liquid clumping in one part of the cotton or sponge when refilling liquid as in the conventional method, it has the effect of preventing an excessive supply of liquid or a supply of liquid below a certain amount when supplying liquid to the combustion portion. In particular, since the liquid can always be supplied at a constant speed and in a constant amount, it prevents the wick installed in the combustion portion from burning, and at the same time, it has the effect of easily generating smoke because it burns a certain amount of liquid. In addition, since the inhalation portion is made transparent or translucent, it is easy to check the remaining amount of liquid, which prevents the wick from burning due to liquid depletion.

Brief Description of Drawings

- [0012] Fig. 1 is an exploded perspective view of an inhalation portion of an electronic cigarette according to an embodiment of the present invention.
Figs. 2 and 3 are exploded perspective views of an atomizer in an electronic cigarette according to embodiments of the present invention.
Fig. 4 is a cross-sectional view of an electronic cigarette according to an embodiment of the present invention.

Detailed Description for Implementing the Invention

- [0013] The object of the present invention is achieved by an electronic cigarette includes: an atomizer 2 including an absorption portion 24 for absorbing liquid, a combustion portion 25 for vaporizing liquid absorbed in the absorption portion 24 to produce smoke, a power supply portion 20 for supplying power to the combustion portion 25; and an inhalation portion 1 including a reservoir 14 having a space formed therein to receive the liquid, an inlet 121 formed by extending one end of the reservoir 14, a guide groove 141 formed in a side of

- the reservoir 14, and a passageway connecting the inlet 121 to the guide groove 141, the inhalation portion 1 being removable from the atomizer 2; wherein, in a state the inhalation portion 1 is inserted into the atomizer 2, a portion of the absorption portion 24 is inserted into the space of the reservoir 14 to absorb the liquid received in the reservoir 14, wherein the combustion portion 25 vaporizes the absorbed liquid to produce smoke, and wherein the inlet 121 is formed to inhale the vaporized smoke and allow the inhaled smoke to escape through the inlet 121.
- [0014] In addition, the electronic cigarette may further include an absorber member 242 which is inserted through the combustion portion 25 into the absorption portion 24 to facilitate absorption of liquid in the absorption portion 24 and to facilitate vaporization of the absorbed liquid in the combustion portion 25.
- [0015] Also, one end of the absorption portion 24 may be sloped to further facilitate the absorption of liquid received from the inhalation portion 1.
- [0016] In addition, the electronic cigarette may further include a mesh 29 that absorbs and retains the liquid around a periphery of the combustion portion 25, to prevent the liquid absorbed in the absorption portion 24 from leaking into an intake 262, and to prevent the liquid from blocking the intake 262.
- [0017] Fig. 1 is an exploded perspective view of an inhalation portion of an electronic cigarette according to an embodiment of the present invention,
- [0018] Figs. 2 and 3 are exploded perspective views of an atomizer in an electronic cigarette according to embodiments of the present invention.
- [0019] Fig. 4 is a cross-sectional view of an electronic cigarette according to an embodiment of the present invention.
- [0020] An embodiment according to the present invention will now be described in detail with reference to the accompanying drawings.
- [0021] As shown in Figs. 1 to 4, an electronic cigarette according to an embodiment of the present invention includes an inhalation portion 1 and an atomizer 2.
- [0022] The inhalation portion 1 is roughly in the form of a cylindrical casing that is flat at one end and cylindrical at the other end, with a reservoir 14 formed inside which a space is formed to receive a liquid containing nicotine. Then, an inhalation cap 12 having an inlet 121 is fitted at one end of the inhalation portion 1, and a protrusion 122 is formed on an inner side of the inhalation cap 12 for spacing between the inhalation cap 12 and a regulator 13. The regulator 13, which is roughly a structure in which the protrusions 122 are omitted from the inhalation cap 12, is installed between the inhalation cap 12 and the reservoir 14 to slow down the inhalation speed. Here, the regulator 13 is installed to prevent the inhalation speed from being too fast when a user inhales by placing the inlet 121 against a mouth and is similar to the inhalation speed of a cigarette when smoking a conventional cigarette. Of course, it is possible to omit the regulator 13 and form the shape of the inlet 121 of the inhalation cap 12 differently to regulate the inhalation speed. Here, the regulator 13 corresponds to the structure of the inhalation cap 12 and will not be described in detail.
- [0023] In the above-described inhalation portion 1, an injection port 142 connecting with the space of the reservoir 14 is formed at the other end of the inhalation portion 1, a guide groove 141 recessed inwardly on an outer surface of the inhalation portion 1 is formed in a longitudinal direction, and a passageway is formed in which the inhalation port 1 and the guide groove 141 are connected to an inwardly directed side of the inhalation portion 1. In this case, a rib 15 is formed on an inner side of the passageway of the inhalation portion 1 to prevent the regulator 13 from entering further. Accordingly, the smoke generated by the combustion portion 25 is discharged along the passageway through the guide groove 141 to the inlet 121. This will be explained later.
- [0024] Here, the reservoir 14 has a certain viscosity, and a liquid containing nicotine is stored in it, and an injection port 142 is formed to correspond to the viscosity of the liquid so that the liquid stored inside the reservoir 14 does not spill out even if the injection port 142 is facing downward while the liquid is stored inside the reservoir 14. That is, the higher the viscosity of the liquid, the greater the surface tension, so the lower the surface tension of the liquid, the smaller the opening of the injection port 142, and the higher the surface tension of the liquid, the larger the inner diameter of the injection port 142 can be formed. Therefore, the inner diameter of the injection port 142 is formed in consideration of the surface tension of the liquid such that the liquid does not spill out, and the inner diameter of the injection port 142 is formed with a diameter between 2.5 mm and 3.5 mm in consideration of the optimal amount of liquid to be supplied to the combustion port 25. This also will be explained later.
- [0025] On the other hand, the inhalation portion 1 is formed of a transparent or translucent synthetic resin material. Accordingly, the amount of liquid remaining in the reservoir can be easily checked with the naked eye, and the absorber member 242 can be prevented from burning by confirming that the liquid is exhausted.
- [0026] The atomizer 2, which vaporizes the liquid stored in the reservoir 14 to produce smoke, includes a main body 21, a power supply part 20, an absorption portion 24, and a combustion portion 25.
- [0027] The main body 21 includes a top case 211 and a bottom case 212.
- [0028] The top case 211 is formed in a roughly cylindrical shape, with a top inner diameter narrower than a bottom inner diameter.

- [0029] The bottom case 212 is formed in a roughly cylindrical casing and houses a battery 22.
- [0030] The power supply portion 20 includes the battery 22 and the switch 23.
- [0031] The battery 22 is installed inside the bottom case 212. And, on the top of the battery 22, a coupling portion 30 having a power terminal 221 is installed to supply power to the combustion portion 25. In this case, a male thread is formed on the outer surface of the coupling portion 30 to prevent airflow, a female thread is formed on the inner surface of the top to engage with a connection portion 27, the female thread is connected to a power source of the battery, and a plurality of guiding grooves 31 are formed on the top to allow outside air to enter. This will be explained later.
- [0032] The switch 23 is installed on one side of the coupling portion and turns the power of the battery 22 on or off. Herein, the switch 23 is formed of a transparent material and an LED lamp (not shown) is installed on the inside of the switch 23 to indicate that the power is turned on. Accordingly, when the switch 23 is pressed, the LED lamp is emitted by inputting the power of the battery 22, and the user can confirm that the power is turned on by looking at the emission status of the LED lamp when the switch 23 is released, the LED lamp is turned off, and the user can confirm that the power is cut off.
- [0033] The combustion portion 25, which receives power from the battery 22 and vaporizes the liquid to produce smoke, includes a connector body 26, a connection portion 27, a heating portion 28, and a mesh 29.
- [0034] The connector body 26 includes a first fixing portion 261, a support portion 262, a guide portion 263, and a second fixing portion 264.
- [0035] The first fixing portion 261 is cylindrical in shape on the inside and is formed so that the outer diameter of the top is less than the outer diameter of the bottom to correspond to the inner diameter of the top case 211, and is inserted into the lower part of the top case 211. At this time, the inner diameter of the top case 211 becomes smaller toward the top, and the outer diameter of the first fixing portion 261 becomes smaller toward the top so that when the first fixing portion 261 is inserted into the lower part of the top case 211, the first fixing portion 261 becomes tighter toward the top of the top case 211. Accordingly, the first fixing portion 261 is coupled and fixed to the top case 211 without the need for additional fixing means.
- [0036] The support portion 262, which is approximately cylindrical, is secured by fitting over the top of the second fixing portion 264 and is inserted into the inside of the first fixing portion 261.
- [0037] The guide portion 263 is roughly cylindrical with an opening at the top, and a through hole 263A is formed at the bottom to connect with the top opening, and holes through which the wires of the heating element 282 are passed are formed on both sides of the through hole 263A and is disposed on the top of the second fixing portion 264 and inserted into the inside of the support portion 262.
- [0038] The second fixing portion 264 is roughly a cylindrical shape with a top and bottom perforated, the top being stepped to an outer diameter that is smaller than the outer diameter of the bottom, and the bottom being stepped to an outer diameter that extends outwardly to hang on the top case 211, and is fixed by fitting into the lower part of the top case 211. At this time, an inlet groove 264A is formed at the bottom of the second fixing portion 264 to allow air to enter. This will be explained later.
- [0039] The connection portion 27 is inserted into the bottom of the second fixing portion 264 and includes a connection body 271, a connection terminal 272, and a terminal cap 273.
- [0040] The connection body 271 is roughly cylindrical with a stepped outer surface, with a male thread formed at the bottom to engage the female thread of the coupling portion 30, an air intake hole 271A formed at the top of the male thread to allow air to enter, and a protrusion formed at the inner side to hold an insulator 274. Then, the connecting body 271 is inserted into the lower part of the second fixing portion 264, and the top of the connection body 271 is threaded into the top of the second fixing portion 264 to fix it.
- [0041] The connection terminal 272 is a roughly stepped cylindrical shape, with a groove formed on its outer surface to receive an insulator. That is, with the insulator 274 inserted into the connection terminal 272, the insulator 274 is secured by fitting the insulator 274 onto the protrusion of the connection body 271.
- [0042] The terminal cap 273 is a disk with a hole formed in the center, and holes through which the wires of the heating element 282 pass are formed on both sides of the hole, and is fitted and fixed on the inside of the top of the connection body 271. In this case, the terminal cap 273 prevents the liquid from flowing from the upper part and flowing into the inside of the connection terminal 272.
- [0043] The heating portion 28 includes a heating element receiving portion 281 and a heating element 282.
- [0044] The heating element receiving portion 281 is roughly cylindrical with an opening at the top and a through hole 281A through which air is introduced at the bottom and is inserted into the guide portion 263.
- [0045] The heating element 282, which is a roughly coiled nichrome wire, is disposed inside the heating element receiving portion 281, wires are connected to both ends of the heating element 282, the wires pass through the bottom of the heating element receiving portion 281, through the hole in the guide portion 263, and into the hole in the terminal cap 273, and one of the two wires is connected to the connection terminal 272 and

the other is connected to the connection body 271. Accordingly, the connection terminal 272 is connected to the power terminal 221, and the connection body 271 is connected to the coupling portion 30 so that the heating element 282 is powered by the battery 22 to heat up and vaporize the liquid. This will be explained later.

- [0046] The mesh 29 is inserted into the guide portion 263 so as to be disposed between the heating element receiving portion 281 and the guide portion 263 in the form of an approximately fine steel wool. This is because, when the liquid is introduced into the heating element 282, the liquid may block the through hole 281A of the heating element receiving portion 281, thereby blocking outside air from entering the connector body 26, by wrapping the periphery of the connector body 26 with the mesh 29, the mesh 29 absorbs the liquid that flows into the interior of the guide portion 263 through the through hole 281A of the heating element receiving portion 281 or the hole through which the wire passes to prevent the through hole 281A from being blocked. In addition, because the mesh 29 holds the liquid, it allows continuous vaporization of the heating element 282 and also prevents heat generated by the heating element 282 from being transferred to the connector body 26.
- [0047] The absorption portion 24 includes an inlet portion 241 and an absorber portion 242.
- [0048] The inlet portion 241 is formed as a cylindrical wedge with a sloping top surface, an outer diameter less than the inner diameter of the injection port 142, and a stepped bottom extending from the top, the bottom fitting into the top of the support portion 262, and the top fitting into the injection port 142 of the reservoir 14. At this time, while the bottom of the inlet portion 241 is fitted to the top of the support portion 262, the bottom two sides of the inlet portion 241 are cut so that the outside air flowing from the guide portion 263 can pass between the guide portion 263 and the inlet portion 241. Accordingly, a gap occurs between the guide portion 263 and the inlet portion 241, through which air flows into the reservoir 14, and the liquid received in the reservoir 14 flows down the inlet portion 241. The reason for the sloped top of the inlet portion 241 is to provide a large inlet for easy inhalation of the liquid, but also to ensure that the liquid stored in the reservoir 14 is used up to the last drop. For example, if the top of the inlet portion 241 is formed horizontally rather than being sloped, the top of the inlet portion 241 will protrude above the top of the injection port 142 when the inlet portion 241 is inserted into the injection port 142. That is, to the extent that the top of the inlet portion 241 protrudes above the top of the injection port 142, the liquid will remain in the reservoir 14 and the liquid will not be fully utilized. However, in the present invention, the top of the inlet portion 241 is designed to fit in a manner where the inlet portion 241 extends above the top of the injection port 142. Furthermore, the upper section of the inlet portion 241 is beveled, so that the top opening of the inlet portion 241 extends to the top of the injection port 142. This design ensures that the liquid contained in the reservoir 14 can be easily drawn in, and every last drop can be utilized without any liquid being left behind.
- [0049] In addition, the tube-shaped inlet portion 241, which surrounds the absorber member 242, simultaneously performs the function of engaging the reservoir 14. The structure in which the tube-shaped inlet portion 241 wraps around the absorber member 242 prevents the absorber member 242 from being damaged by directly hitting the reservoir 14 when the inhalation portion 1 is inserted because the inlet portion 241 surrounds the upper part of the absorber member 242. Furthermore, the inlet portion 241 fits into the injection port 142 of the reservoir 14 and simultaneously plays a role in fixing an end of the reservoir 14, so that the inhalation portion 1 can be firmly fixed to the inside of the top case 211.
- [0050] Here, the inlet portion 241 is protruding on both sides of the underside of the inlet portion 241 to form a larger gap between the heating element receiving portion 281 and the guide portion 263. This will be explained later.
- [0051] The absorber member 242, which is roughly a wick made of a heat-resistant synthetic fiber or the like, is inserted into and penetrates the heating element 282 and is installed so that both ends are inserted into the bottom of the inlet portion 241 and protrude a certain amount from the top of the inlet portion 241. Accordingly, the absorber member 242 more easily absorbs the viscous liquid received in the reservoir 14, and the absorbed liquid is transferred to the heating element 282, where the heating element 282 heats the liquid absorbed by the absorber member 242 and vaporizes it to generate smoke.
- [0052] Hereinafter, the operation of an electronic cigarette according to an embodiment of the present invention will be described in detail with reference to Figs. 1 to 4.
- [0053] First, the inhalation part 1 is separated from the top case 211, the liquid is injected into the reservoir 14, and the inhalation portion 1 is inserted into the top case 211 so that the injection port 142 is inserted into the top of the inlet portion 241.
- [0054] When the inhalation portion 1 is inserted into the top case 211, the absorber member 242 absorbs the liquid received in the reservoir 14 and transfers it to the heating element 282. At this time, when the user presses the switch 23, heat is generated in the heating element 282 and the liquid is vaporized to produce smoke.
- [0055] When the user presses the switch 23 for a certain period of time and inhales the top of the inhalation portion 1, outside air is inhaled through the inlet groove 264A of the second fixing portion 264, and the inhaled air flows between the second fixing portion 264 and the connection body 271, through the guiding groove 31 of the coupling 30, and into the air inlet hole 271A of the connection body 271. Then, the air flows through the

- hole formed in the center of the terminal cap 273, the through hole 263A of the guide portion 263, and the through hole 281A of the heating element receiving portion 281, respectively, and is discharged through the guide groove 141 of the inhalation portion 1 through the inlet 121 of the inhalation cap 12. At this time, the smoke generated by the heating element 282 is mixed with the inhaled air and comes out of the gap between the inlet portion 241 and the guide portion 263. The smoke from the gap then travels through the guide groove 141 of the inhalation portion 1 and exits through the inlet 121. Accordingly, by inhaling the smoke discharged through the inlet 121, the user experiences smoking like burning a real cigarette.
- [0056] Meanwhile, when the user releases the switch 23, the power supply to the heating element 282 is cut off, so that the heating element 282 no longer produces smoke. That is, the heating element 282 only operates while the switch 23 is depressed, which prevents the heating element 282 from being continuously energized even if the user makes a mistake.
- [0057] As described above, the present invention can store a large amount of liquid in the reservoir 14, and in particular, since the flow of liquid is constant, a constant speed and a constant amount of liquid can be supplied to the heating element 282, which can generate a certain amount of smoke. This is possible because the injection port 142 of the reservoir 14 is formed to correspond to the viscosity coefficient of the liquid in order to prevent the liquid from leaking out of the reservoir 14 due to the surface tension of the liquid even when the injection port 142 is facing downward after storing the liquid in the reservoir 14.
- [0058] For example, if a sponge or a cotton ball is used to store the liquid as in a conventional electronic cigarette, the liquid stored at the top of the sponge or cotton ball takes a long time to come down, so the liquid cannot be properly supplied to the heating element 282, and in particular, the liquid remaining in the reservoir 14 cannot be fully used. In addition, if the sponge or the cotton ball absorbs an excessive amount of liquid in order to store a large amount of liquid, the liquid drips down during the liquid refilling process, and furthermore, due to the excessive supply of liquid to the heating element 282, the liquid leaks out of the intake 262 where the outside air is inhaled, or the heating element 282 does not vaporize the liquid properly and does not produce smoke.
- [0059] However, the present invention solves the above problems by not using cotton balls or sponges and prevents excessive supply of liquid to the heating element 282 while facilitating liquid refilling.
- [0060] On the other hand, to facilitate wetting the absorber member 242 by standing the reservoir 14, the absorber member 242 should protrude into the inside of the reservoir 14 to facilitate wetting the absorber member 242 with liquid. However, unless the upper part of the inlet portion 241 is a sloped opening, liquid cannot be properly supplied to the absorber member 242 when the liquid level is lower than the height of the inlet portion 241 when the reservoir 14 is erected. As a result, even if some liquid remains in the reservoir 14, the liquid cannot be supplied to the absorber member 242, and it is necessary to replace the reservoir 14 with a new reservoir. Furthermore, repeated tilting and standing of the reservoir 14 can cause air bubbles to form and lodge in the inlet portion 241. That is, if the bubbles remain inside the inlet portion 241, they may interfere with the supply of liquid to the absorber member 242, resulting in the supply of less liquid than the intended amount or no liquid at all.
- [0061] However, in the present invention, the top of the inlet portion 241 is sloped and incised, so that bubbles can easily escape in a lateral or upward direction even when the reservoir 14 is erected, thereby preventing bubbles from remaining inside the inlet portion 241. Furthermore, since the present invention is a structure in which the sloped top opening of the inlet portion 241 is installed so that it starts from the top of the injection port 142 and protrudes to the top of the injection port 142, and an absorber member 242 is installed inside the inlet portion 241, it is possible for the absorber member 242 to absorb even the last drop of the liquid stored in the reservoir 14, so that the liquid received in the reservoir 14 can be exhausted without leaving anything behind. As a result, the liquid can be used efficiently for a long period of time, reducing the frequency of refilling the liquid and eliminating the hassle of refilling. Furthermore, since the inlet portion 241 is sloped and incised, the exposed area of the absorber member 242 is large, so the time for erecting the reservoir 14 can be minimized and the absorber member 242 can be sufficiently saturated with liquid. Furthermore, the constant supply of liquid prevents the absorber 242 from burning, thereby preventing the user from inhaling the odor generated by the burning of the absorber member 242, thereby preventing the user from becoming unpleasant due to the burning odor.
- [0062] In addition, since the reservoir 14 is integrally formed with the inhalation portion 1 at the end of the electronic cigarette, the reservoir 14 can be removed from the electronic cigarette with a single operation.
- [0063] For example, if the reservoir 14 is embedded inside the top case 211, it is necessary to first remove the top case 211 and then secondly remove the reservoir 14. That is, when separating the reservoir 14, the bottom case 212 must be placed on a desk or the like, and then the reservoir 14 must be separated from the top case 211, and then the top case 211 must also be placed on the desk, which is cumbersome, and there is a risk that the top case 211 or the bottom case 212 may roll off the desk and be lost.
- [0064] Furthermore, smoking is often done outdoors, and if the user wishes to fill the electronic cigarette with liquid while outdoors, it is necessary to separate the top case 211 and then separate the reservoir 14 from the top case 211, which makes it difficult to fill the reservoir 14 with liquid because there is no place to put the cases 211, 212 down, and it is necessary to find a safe place to put the cases 211, 212 down, which

is a cumbersome procedure to perform each time to fill the liquid. However, in the present invention, the reservoir 14 is integrally formed with the inhalation portion 1, and the inhalation portion 1 is removably coupled to one end of the electronic cigarette, so that the reservoir 14 can be removed at once by grasping the inhalation portion 1 and pulling it out of the top case 211 without removing the top case 211 of the electronic cigarette. Furthermore, it is very simple to refill the tobacco liquid by holding the inhalation portion 1 and turning it over so that the reservoir 14 is facing up.

[0065] On the other hand, when refilling the tobacco liquid on the street, the reservoir 14 may fall to the ground and be lost, but the present invention prevents the reservoir 14 from being lost because the inhalation portion 1 and the reservoir 14 are integrally formed and, consequently, the reservoir 14 is fixed to the inhalation portion 1.

[0066] Furthermore, the inhalation portion 1 is formed at one end of the electronic cigarette, and since the inhalation portion 1 and the reservoir 14 are integrally formed, it is very easy to remove the reservoir 14. If the reservoir 14 is configured separately, the size of the reservoir 14 is small and it is difficult to hold it by hand when refilling the liquid, which is very inconvenient. However, in the present invention, the inhalation portion 1 and the reservoir 14 are integrally formed, and it is convenient to hold the reservoir 14 because it is possible to hold the relatively long inhalation portion 1 and fill the reservoir portion 14 with liquid.

[0067] Here, if the reservoir 14 is embedded inside the top case 211, the remaining amount of liquid cannot be checked, but since the present invention forms the inhalation portion 1 as transparent or translucent, the remaining amount of liquid stored in the reservoir 14 can be easily checked by eye, and even if a little liquid remains, the remaining amount of liquid can be checked by tilting the electronic cigarette so that the remaining amount of liquid can be easily checked without removing the reservoir 14. This prevents the absorber 242 from burning out due to liquid depletion.

[0068] Furthermore, since the present invention forms a slight gap between the tube-shaped inlet portion 241 and the absorber member 242, the space between the inner wall of the absorber member 242 and the inlet portion 241 can be filled with liquid (tobacco liquid). Generally, the smoking tool is tilted because the smoking tool is held in the mouth to smoke, but if the reservoir 14 is only half filled with liquid and the reservoir 14 is tilted, the absorber member 242 may not be immersed in the liquid. That is, if the absorber member 242 is not immersed in the liquid and the liquid permeating the absorber member 242 is vaporized, no liquid is subsequently supplied to the absorber member 242, and it is troublesome to stand the smoking device to wet the absorber member 242 and smoke again. However, in the present invention, the upper part of the inlet portion 241 is formed into a tubular shape and surrounds the absorber member 242, so that the space between the absorber member 242 and the inner wall of the inlet portion 241 can be filled with liquid. Accordingly, even if the absorber 242 is not immersed in the liquid when the design is tilted and the absorber member 242 is not immersed in the liquid when smoking, the liquid filled in the inner wall of the inlet portion 241 is supplied to the absorber member 242, so it is convenient to extend the smoking time without having to re-erect the design.

[0069] In describing the above-described invention, the same reference numerals are used for identical configurations, even if the embodiments are different, and the description may be omitted as necessary.

[0070] As described above, the present invention has been specifically illustrated by way of embodiments with reference to the accompanying drawings, but it should not be understood that the present invention is limited to the above embodiments, as the above embodiments are illustrated by way of preferred examples of the present invention. Therefore, in addition to what has been described above, a person skilled in the art to which the present invention belongs will readily be able to practice other forms of the present invention within the same category as the above-described embodiment or to practice an invention in a field equally broad as the present invention, from the description of the embodiment of the present invention alone.

Description of Symbols

- [0071] 1; inhalation portion
 12; inhalation cap
 121; inlet
 122; protrusion
 13; regulator
 14; reservoir
 141; guide groove

142; injection port
15; rib
2; atomizer
21; main body
211; top case
212; bottom case
22; battery
221; power terminal
23; switch
24; absorption portion
241; inlet portion
242; absorber member
25; combustion portion
26; connector body
261; first fixing portion
262; support portion
263; guide portion
263A; through hole
264; second fixing portion
264A; inlet groove
27; connection portion
271; connection body
271A; air inlet hole
272; connection terminal
273; terminal cap
274; insulator
28; heating portion
281; heating element receiving portion
281A; through hole
282; heating element
29; mesh
30; coupling portion

31; guiding groove

Drawings

Fig. 1

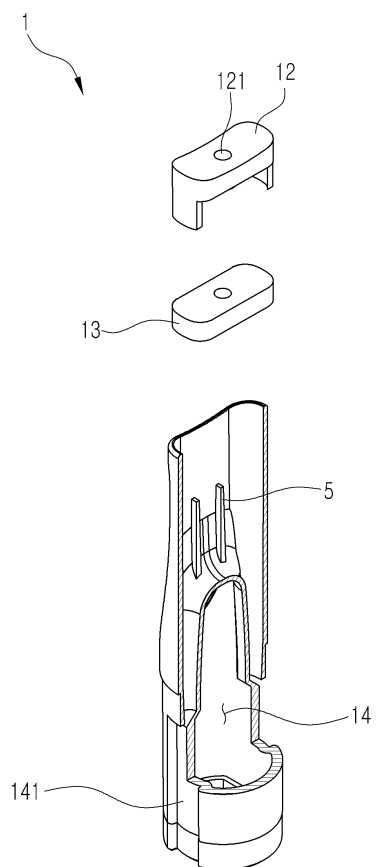


Fig. 2

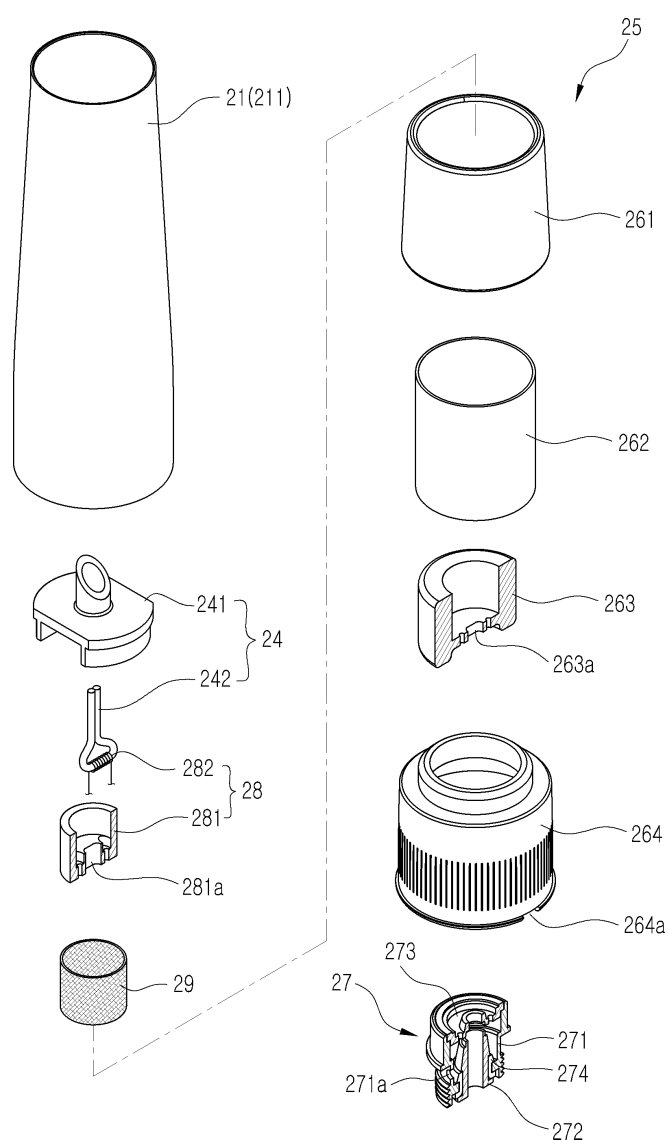


Fig. 3

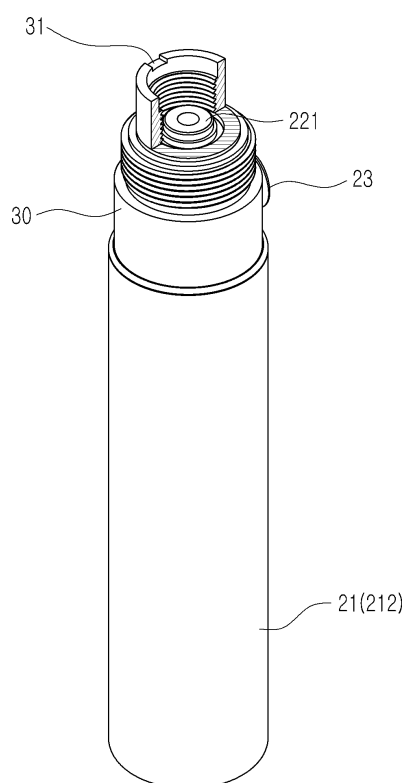
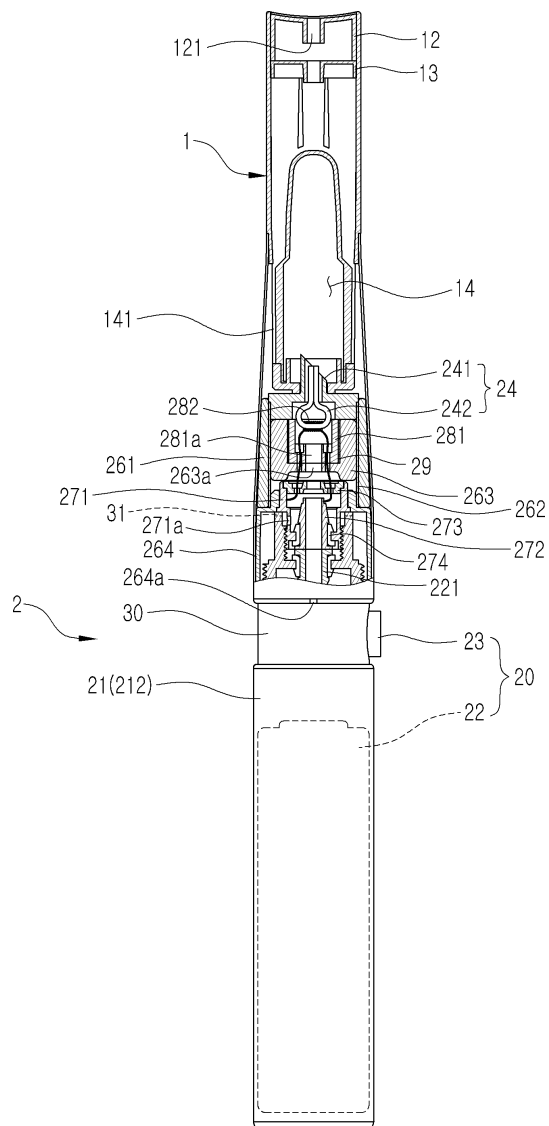


Fig. 4





September 27, 2023

Certification

Welocalize Translations

TRANSLATOR'S DECLARATION:

I, **Hyunchan Lee**, hereby declare:

That I possess advanced knowledge of the English and Korean languages. The attached Korean into English translation has been translated by me and to the best of my knowledge and belief, it is a true and accurate translation of:
KR200453400Y1

(Digital or printed signature here above the line)

A handwritten signature in black ink, appearing to be "Hyunchan Lee", written above a horizontal line.

Hyunchan Lee

Project Number: #WGM_2309_P0075

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