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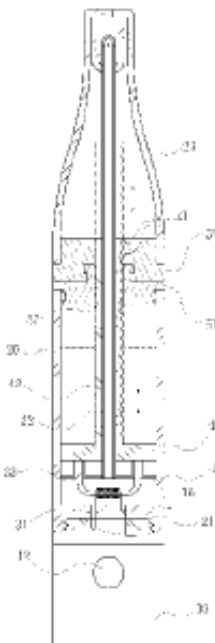
(54) Electronic cigarette

(57) ABSTRACT

The present invention relates to an electronic cigarette that generates steam only by controlling the medicinal liquid to be properly sucked into a suction wick so that users do not experience discomfort when using the electronic cigarette, and allows the user to control the amount of steam inhaled according to the user's preference, thereby providing satisfaction to all users.

The present invention comprises: a medicinal liquid container having one end to which a straw is inserted and the opposite end fixed to a body, and filled medicinal liquid therein; a switch provided to be exposed to the outside at a location to which the medicinal liquid container of the body is connected to regulate power of a battery provided inside the body; an atomizing chamber provided between the medicinal liquid container and the switch; a heating element provided inside the atomizing chamber and generating heat when power is applied from the battery; a suction wick having a central part in contact with the heating element and having both ends connected to the medicinal liquid container; a communication pipe fixed to a central part of the medicinal liquid container so as to communicate with the atomizing chamber and through which the smoke generated through the heating element and the suction wick escapes; a medicinal liquid discharge member provided in the medicinal liquid container so as to be able to move up and down and pushing the medicinal liquid filled in the medicinal liquid container toward the suction wick; and a lifting member configured to be rotatable by being provided outside the body and lifting the medicinal liquid discharge member.

REPRESENTATIVE DRAWING - Fig. 3



What is claimed is:

Claim 1

An electronic cigarette comprising:

a medicinal liquid container having one end to which a straw is inserted and the opposite end fixed to a body, and filled medicinal liquid therein;

a switch provided to be exposed to the outside at a location to which the medicinal liquid container of the body is connected to regulate power of a battery provided inside the body;

an atomizing chamber provided between the medicinal liquid container and the switch;

a heating element provided inside the atomizing chamber and generating heat when power is applied from the battery;

a suction wick having a central part in contact with the heating element and having both ends connected to the medicinal liquid container;

a communication pipe fixed to a central part of the medicinal liquid container so as to communicate with the atomizing chamber and through which the smoke generated through the heating element and the suction wick escapes;

a medicinal liquid discharge member provided in the medicinal liquid container so as to be able to move up and down and pushing the medicinal liquid filled in the medicinal liquid container toward the suction wick; and

a lifting member having upper and lower ends respectively fixed to the straw and the medicine liquid container, having a central part configured to be rotatable, and lifting the medicinal liquid discharge member.

Claim 2

An electronic cigarette comprising:

a medicinal liquid container having one end to which a straw is inserted and the opposite end fixed to a body, and filled medicinal liquid therein;

a switch provided to be exposed to the outside at a location to which the medicinal liquid container of the body is connected to regulate power of a battery provided inside the body;

an atomizing chamber provided between the medicinal liquid container and the switch;

a spiral plate shaped-heating element provided inside the atomizing chamber and generating heat when power is applied from the battery;

a suction pipe having a central part in contact with the heating element, having a discharge hole in and upward direction between each pitch of the heating element, and having both ends connected to the medicinal liquid container;

a communication pipe fixed to a central part of the medicinal liquid container so as to communicate with the atomizing chamber and through which the smoke generated through the evaporation of the medicinal liquid held between each pitch of the heating element escapes;

a medicinal liquid discharge member provided in the medicinal liquid container so as to be able to move up and down and pushing the medicinal liquid filled in the medicinal liquid container toward the suction pipe;

and a lifting member having upper and lower ends respectively fixed to the straw and the medicine liquid container, having a central part configured to be rotatable, and lifting the medicinal liquid discharge member.

Claim 3

The electronic cigarette of any of claim 1 and claim 2,

wherein the medicinal liquid discharge member comprises a spiral pipe that is movably fitted to the outside of the communication pipe, and a piston having a central part where the spiral pipe is integrally formed and an outer surface that is water tightly fitted to an inner wall of the medicinal liquid container;

and wherein the lifting member comprises a fixing body having a lower end fitted and fixed to one end of the medicinal liquid container in a watertight manner and a through-hole therein that the spiral pipe penetrates, and a rotating body having an upper end inserted into the straw to be fixed, having a plurality of guide protrusions corresponding to an outer surface of the spiral pipe, and fixed to the fixing body to be rotatable to lift the medicinal liquid discharge member.

Claim 4

The electronic cigarette of claim 3,

wherein the fixing body is provided with a locking ball that always exerts a repulsive force by a compression coil spring, and wherein a plurality of locking grooves are formed at equal angles along the circumferential direction at a position of the rotating body corresponding to the fixing body.

Claim 5

The electronic cigarette of claim 1,

wherein a see-through window is formed in the medicine liquid container in the longitudinal direction so that the medicine liquid therein is seen from the outside,

and wherein a number and a scale indicating the capacity are displayed on one side of the see-through window so that the remaining amount of the medicinal liquid can be checked.

Claim 6

The electronic cigarette of claim 1,

wherein a display window for displaying the remaining amount of the battery, the number of switching of the switch, an output voltage of the battery, and the power supply of the battery is formed on an outer surface of the body on the opposite side of the switch;

and wherein a voltage-up button and a voltage-down button for increasing or decreasing the voltage of the battery is formed at a position adjacent to the display window of the body.

SPECIFICATION

TECHNICAL FIELD

- [0001] The present invention relates to an electronic cigarette, and more specifically, to an electronic cigarette that ensures that the liquid of medicinal substances remains appropriately sucked in a suction wick or a suction pipe so that only water vapor is generated so as not to cause discomfort during use, and that allows users to control the amount of water vapor inhaled according to the user's preference, thereby giving satisfaction to all users.

BACKGROUND TECHNOLOGY

- [0002] Recently, an electronic cigarette that exhibits effects similar to those of actual smoking has been developed as an aid to smoking cessation. When a user inhales with an electronic cigarette in their mouth the same way as when smoking a conventional cigarette, water vapor is generated inside the electronic cigarette and emitted to the outside, giving the user similar feeling to smoking a cigarette.
- [0003] In this electronic cigarette: a battery is stored inside a cylindrical body; a straw is installed at one end of the body; a switch that is automatically switched on when the suction of the straw is made is connected to the battery; a coil-type heating element that generates heat when the switch is turned on is provided; a medicine liquid container having an absorbent member such as cotton is spaced apart from the heating element is provided in the vicinity of the heating element; and a suction wick that evaporates and generates smoke by heating of the heating element in a state where the medicinal liquid is inhaled from the medicinal liquid container in contact with the heating element is provided. When the user inhales through the straw, the switch inside the body responds to the suction power and is switched thereby, and power from the battery is applied to the heating element so that the heating element generates heat. When the heating element heats up, the medicinal liquid that has been sucked into the suction wick evaporates and generates harmless smoke to the human body, and this smoke is sucked into the user's mouth through the straw to create a situation similar to conventional smoking.
- [0004] However, in these general electronic cigarettes, the thickness of the suction wick is very thin, and only one side of the suction wick is connected to the medicinal liquid container, resulting in lessening the amount of medicinal liquid that is sucked by the suction wick. For these reasons, the amount of water vapor generated when the heating element is heated is reduced, and the medicinal liquid absorbed into the suction wick evaporates in a short time, so the smoke generation time is very short, and the suction wick is burnt severely, causing an unpleasant feeling when using the electronic cigarette.
- [0005] In addition, it was also very cumbersome to fill the inside of the medicinal liquid container: removing the straw; removing the medicinal liquid container; and injecting the medicinal liquid into the absorption member, followed by placing the medicinal liquid container inside the body and inserting the straw.
- [0006] On the other hand, even though electronic cigarettes are used as an aid to smoking cessation for reducing the frequency of using electronic cigarettes gradually and eventually quitting smoking, how many times electronic cigarettes are

used per day is hard to know if users do not count manually. Plus, when the desire to smoke arises, users habitually use electronic cigarettes, which will not fit the purpose of using electronic cigarettes.

- [0007] In addition, since it is not easy to know the remaining amount of the battery built into the body of a typical electronic cigarette, it is difficult to predict when to replace the battery. Accordingly, the electronic cigarette could become unavailable when users need it while carrying it without knowing that the battery has reached the end of its life.
- [0008] In view of this, the present applicant has disclosed an electronic cigarette that operates only when the switch is pressed so that the number of switching is displayed externally, letting users know how many times the electronic cigarette is used per day to allow them to take care of their health in Utility Model Application No. 2011-0000000. Also, the remaining battery level is displayed externally at every switch so that it is easy to know when to replace the battery.
- [0009] Although the display device of the electronic cigarette, according to Utility Model Registration No. 2010-0012935, has the number of switching and remaining battery displayed externally to promote convenience in use, the need to provide an electronic cigarette that can satisfy all the user's preferences is required as the amount of smoke intake with which each user is satisfied is different.

DESCRIPTION OF INVENTION

PROBLEMS TO BE SOLVED

- [0010] The present invention is proposed in view of the points above. The purpose of the present invention is to provide an electronic cigarette that allows the medicinal liquid to be properly sucked on the suction wick so that the suction wick does not burn but generates only steam, avoiding any discomfort when used by users. Also, it is designed to give satisfaction to all users by allowing the user to adjust the amount of steam inhaled according to the user's preference.

SUMMARY OF INVENTION

- [0011] In order to solve the problems, the present invention comprises: a medicinal liquid container having one end to which a straw is inserted and the opposite end fixed to a body, and filled medicinal liquid therein; a switch provided to be exposed to the outside at a location where the medicinal liquid container of the body is connected thereto to regulate power of a battery provided inside the body; an atomizing chamber provided between the medicinal liquid container and the switch; a heating element in the form of a coil provided inside the atomizing chamber and generating heat when power is applied from the battery; a suction wick having a central part in contact with the heating element and having both ends connected to the medicinal liquid container; a communication pipe fixed to a central part of the medicinal liquid container so as to communicate with the atomizing chamber and through which the smoke generated through the heating element and the suction wick escapes; a medicinal liquid discharge member provided in the medicinal liquid container so as to be able to move up and down and pushing the medicinal liquid in the medicinal liquid container toward the suction wick; and a lifting member having upper and lower ends respectively fixed to the straw and the medicine liquid container and a central part configured to be rotatable, and lifting the medicinal liquid discharge member.
- [0012] As another aspect, the present invention comprises: a medicinal liquid container having one end to which a straw is inserted and the opposite end fixed to a body, and filled with liquid medicine therein; a switch provided to be exposed to the outside at a location where the medicinal liquid container of the body is connected thereto to regulate power of a battery provided inside the body; an atomizing chamber provided between the medicinal liquid container and the switch; a heating element in the form of a spiral plate provided inside the atomizing chamber and generating heat when power is applied from the battery; a suction pipe having a central part in contact with the heating element, having a discharge hole in and upward direction between each pitch of the heating element, and having both ends connected to the medicinal liquid container, respectively; a communication pipe fixed to the central part of the medicinal liquid container so as to communicate with the atomizing chamber and through which the smoke generated through the evaporation of the medicinal liquid staying at each pitch of the heating element escapes; a medicinal liquid discharge member provided in the medicinal liquid container so as to be able to move up and down and push the medicinal liquid filled in the medicinal liquid container toward the suction pipe; and a lifting member having upper and lower ends respectively fixed to the straw and the medicine liquid container, having a central part configured to be rotatable, and lifting the medicinal liquid discharge member.
- [0013] Preferably, the medicinal liquid discharge member may comprise: a spiral pipe that is movably fitted to the outside of the communication pipe; and a piston in which the spiral pipe is integrally formed in a central part thereof while an outer surface is water tightly fitted to an inner wall of the medicinal liquid container. The lifting member may comprise: a fixing body having a lower end fitted and fixed to one end of the medicinal liquid container in a watertight manner, and a through-hole therein that the spiral pipe penetrates; and a rotating body having an upper end inserted into the straw to be fixed, having a plurality of guide protrusions corresponding to an outer surface of the spiral pipe, and fixed to the fixing body to be rotatable to lift the medicinal liquid discharge member.
- [0014] Preferably, the fixing body may be provided with a locking ball that always exerts a repulsive force by a compression coil spring, and a plurality of locking grooves may be formed at equal angles along the circumferential direction at a

position of the rotating body corresponding to the fixing body.

- [0015] Preferably, a see-through window is formed in the longitudinal direction of the medicinal liquid container so that the liquid inside the medicinal liquid can be seen outside, and numbers and scales indicating the capacity for allowing users to check the remaining amount of the medicinal liquid may be formed on one side of the transparent window.
- [0016] Preferably, a display window for displaying the remaining amount of the battery, the number of switching of the switch, an output voltage of the battery, and the power supply of the battery is formed on an outer surface of the body on the opposite side of the switch. Also, a voltage-up button and a voltage-down button for increasing or decreasing the voltage of the battery may be formed at a position adjacent to the display window of the body.

EFFECTS OF INVENTION

- [0017] According to the present invention, since both ends of the suction wick or suction pipe are in contact with the medicinal liquid container, the medicinal liquid can be absorbed to both sides of the suction wick or flowed to both sides of the suction pipe by the capillary phenomenon. Accordingly, the amount of medicinal liquid for generating sufficient smoke is kept in the suction wick or suction pipe at all times. In particular, when the suction pipe is applied, the medicinal liquid is kept on between the pitches of the spiral plate-shaped heating element and then evaporates according to the heat of the heating element. Thus, sufficient smoke can be generated quickly. In addition, since the medicinal liquid is only evaporated, there is no burnt taste at all, and the concern that the heating element will cut off is not needed.
- [0018] In addition, when the medicinal liquid is dried by inhaling smoke in a continuous inhalation, simply rotating the straw forces the medicinal liquid to move toward the suction wick or suction pipe, allowing the medicinal liquid to be more rapidly absorbed into the suction wick or suction pipe. Thus, the amount of smoke that satisfies all users can be generated all the time.
- [0019] In addition, since the user can adjust the amount of smoke generated by adjusting the battery output voltage with the voltage-up or voltage-down buttons according to their preferences, there is also an advantage that all users can be satisfied with the electronic cigarette.

BRIEF DESCRIPTION OF THE DRAWINGS

- [0020] Fig. 1 is an exploded view of an electronic cigarette according to the present disclosure.
- Fig. 2 is a perspective view of an electronic cigarette according to the present disclosure.
- Fig. 3 is a detailed cross-sectional view of an atomizing part of an electronic cigarette according to the present disclosure.
- Fig. 4 is a planar cross-sectional view of a piston operating part of an electronic cigarette according to the present disclosure.
- Fig. 5 is a detailed side view of a display part of an electronic cigarette according to the present disclosure.
- Fig. 6 is a detailed cross-sectional view of an atomizing part of an electronic cigarette according to another embodiment of the present invention.

DETAILED DESCRIPTION

- [0021] Hereinafter, the present invention will be described in detail according to the presented embodiments and accompanying drawings.
- [0022] Fig. 1 is an exploded perspective view of an electronic cigarette according to the present disclosure. Fig. 2 is a perspective view of an electronic cigarette according to the present disclosure. Fig. 3 is a detailed cross-sectional view of an atomizing part of an electronic cigarette according to the present disclosure. Fig. 4 is a planar cross-sectional view of a piston operating part of an electronic cigarette according to the present disclosure. Fig. 5 is a detailed side view of a display part of an electronic cigarette according to the present disclosure.
- [0023] As shown, any electronic cigarette that receives power from a battery (11) provided inside a body (10) to evaporate the medicinal liquid and produces the same effect as smoking the conventional cigarette by evaporating the medicinal liquid can be applied with the disclosed electronic cigarette.
- [0024] The battery (11) is detachably configured inside the body (10) to be replaced when the battery (11) is used up. Although the attachment and detachment structure of the battery (11) is not shown in detail in the drawings, it simply needs to be the same as the battery attachment and detachment structure of a general remote controller. Thus, the detachable structure thereof is not particularly limited.
- [0025] The electronic cigarette is configured to expose the switch (12) for regulating the power of the battery to the outside on an upper part of the body (10) in which the battery (11) is stored, form a display window (13) made of a liquid crystal screen on an outer surface of an end opposite to the switch of the body (10) to display the remaining amount of the battery (11), the number of switching of the switch (12), the output voltage of the battery (11), and the power

supply of the battery (11), and form a voltage-up button (14) and a voltage-down button (15) for increasing or decreasing the voltage of the battery (11) at a locations adjacent to the display window of the body (10).

- [0026] To this end, the display window (13) may comprise: a text display unit for displaying the number of switching of the switch (11), the output voltage of the battery (11), the power supply of the battery (11) in numbers or text; and a battery remaining amount display unit for displaying the remaining battery amount in a shape in which bars are gradually layered inside a shape of the battery (11). The specific shape of the text display unit or the battery remaining amount display unit may be variously changed and applied.
- [0027] Although not shown in the figure, it is obvious that a microprocessor is provided in the body (10), which is configured to be operated by power applied from the battery (11) when switching the switch (12), to count the number of switching of the switch (12), the pressing of the voltage-up button (14) or the voltage-down button (15), detect the remaining amount of the battery (11), and calculate the same to display the number of switching of the switch (12), the output voltage of the battery (11), the power supply of the battery (11), and the remaining amount of the battery (11) on the display window (13).
- [0028] In addition, there is a medicinal liquid container (20) filled with medicinal liquid therein, wherein a female screw (21) is formed at a lower end of the medicinal liquid container (20), and a male screw (16) corresponding thereto is formed at an upper end of the body (10) to be screwed and combined together. The straw (23) is inserted into an upper end of the medicinal liquid container (20).
- [0029] In this case, a space constituting the atomizing chamber (30) is formed in an inner lower part of the medicinal liquid container (20), wherein the heating element (31) that is heated when power is applied from the battery (11) is located inside the atomizing chamber (30), and the suction wick (32) coming into contact with the heating element (31) and having both ends respectively connected to a lower surface of the medicine liquid container (20) is provided in a central part thereof.
- [0030] The communication pipe (22) through which the smoke generated through the heating element (31) and the suction wick (32) escapes is fixed to the center part of the medicinal liquid container (20) so as to communicate with the atomizing chamber (30). A piston (41) is inserted into the inside of the medicinal liquid container (20) to be able to move up and down, wherein an outer circumferential surface of the piston (41) is water tightly fitted to an inner circumferential surface of the medicinal liquid container (20). The spiral pipe (42) integrally formed in a central part of the piston (41) is inserted into an outer surface of the communication pipe (22) so as to be able to move up and down to form a medicinal liquid discharge member. .
- [0031] A lifting member for lifting the medicinal liquid discharge member composed of the piston (41) and the spiral pipe (42) is provided between the medicinal liquid container (20) and the straw (23), wherein the lifting member comprises: a fixing body (51) having a lower part inserted into and fixed to a medicinal liquid container (20); and a rotating body (52) having an upper part fixed to the straw (23).
- [0032] The fixing body (51) and the rotating body (52) are connected to each other to be rotatable. A through-hole (57) is formed inside the fixing body (51) so that the spiral pipe (42) passes through, and a plurality of guide protrusions (53) corresponding to an outer surface of the spiral pipe (42) are formed on the inside of the rotating body (52). Thus, grabbing the body (10) with a hand and rotating the straw (23) rotates the rotating body (52) together to lower the piston (41) and forcibly discharge the medicinal liquid toward the suction wick (32).
- [0033] In addition, a locking ball (55) that always exerts a repulsive force by a compression coil spring (54) is installed in the fixing body (51) so that when the piston (41) is lowered by rotating the straw (23), the discharge amount of the medicinal liquid can be finely adjusted. A plurality of locking grooves (56) are formed at equal angles along the circumferential direction at a position of the rotating body (52) corresponding to the fixing body. Accordingly, as the locking ball (55) is sequentially inserted into each of the locking grooves (56) and the rotation angle of the rotating body (52) is adjusted, the discharge amount of the medicinal liquid is fine-tuned.
- [0034] In addition, a see-through window (24) is formed in the medicinal liquid container (20) in the longitudinal direction so that the medicinal liquid therein is seen from the outside, and on one side of the see-through window (24), a number and a scale (25) indicating the capacity so that the remaining amount of the medicinal liquid can be checked.
- [0035] In this configuration, the user presses the switch (12) with their finger to use the electronic cigarette and inhales through the straw (23). When the switch (12) is turned on, the power of the battery (11) is applied to the heating element (31) for the heating element (31) to generate heat. As both ends of the suction wick (32) in contact with the heating element (31) are connected to a lower surface of the medicinal liquid container (20), respectively, the central part of the suction wick (32) always has enough medicinal liquid sucked therein by the capillary phenomenon, and it is possible to generate enough smoke to satisfy the user by the heat of the heating element (31).
- [0036] This smoke rises along the communication pipe (22), is sucked into the user's body through the straw (23), and then spit out again, resulting in providing the same effect as the conventional smoking.
- [0037] In this case, it is preferable to configure the suction wick (32) to be a little thicker than a commonly used thread-like suction wick so that a larger amount of the medicinal liquid can be absorbed and be made of the material that is easy to suck the medicinal liquid, such as a sponge. It is preferable to configure the heating element (31) in the form of a

coil to be placed in the central part of the suction wick (32) by winding so that the medicinal liquid that has been sucked into the suction wick (32) can evaporate smoothly according to the heating of the heating element (31).

- [0038] Depending on the user, the smoking cycle may be short. If inhalation is performed several times in a short time, it can be dried in a short time even if a large amount of medicinal liquid is sucked into the suction wick (32). In this case, when the user rotates the straw (23) in the forward direction to rotate the rotating body (52) from the fixing body (51), the relative action between the guide protrusion body (52) formed on the inner surface of the rotating body (53) and the spiral pipe (42) causes the spiral pipe (42) to move downward, and the piston (41) integrally formed with the spiral pipe (42) moves along with the movement of the spiral pipe (42) to push the medicinal liquid inside the medicinal liquid container (20) downward. Accordingly, the discharged medicinal liquid is sucked into the suction wick (32) more quickly, and smoking is available again within a short time.
- [0039] In addition, because the locking ball (55) that always exerts a repulsive force by a compression coil spring (54) is formed in the fixing body (51) that supports the rotating body (52) to be rotatable, and a plurality of locking grooves (56) are formed at equal angles in the position of the rotating body (52) corresponding to the locking ball, the locking ball (55) moves from the initial position to the inside of the fixing body (51) when the rotating body (52) is rotated and then the locking body is locked in the next locking groove (56) to stop the rotating body (52). Thus, it is possible to fine-tune the amount of medicinal liquid discharged. This means that if too much of the medicinal liquid is discharged, the amount that can be sucked by the suction wick (32) may exceed, and if the amount of the medicinal liquid is too small, the user can easily know it through the state of their smoking. Thus, the user using the electronic cigarette can inhale smoke while controlling the amount of the medicinal liquid.
- [0040] The remaining amount of the medicinal liquid filling the medicinal liquid container (20) can be checked through the see-through window (24) provided in the medicinal liquid container (20) and the numbers and scales (25) displayed on one side thereof. To fill with the medicinal liquid, the straw (23), the fixing body (51), and the piston (41) are taken out from the medicinal liquid container (20) at once, and the medicinal liquid fills the medicinal liquid container from the top. After holding the fixing body (51) with one hand and rotating the straw (23) with the other hand in the reverse direction to lift the piston (41), the straw (23), the fixing body (51), and the piston (41) are fitted together again. With these simple steps, it is easy to fill the medicinal liquid container with the medicinal liquid.
- [0041] In addition, when the switch (12) is turned on, the number of switching of the switch (12) is counted through the microprocessor and displayed while the numbers are added one by one through the text display unit of the display window (13), and the microprocessor detects the remaining amount of the battery (11) and displays it through the remaining battery amount display unit of the display window (13).
- [0042] Therefore, the user can check how many times they used the electronic cigarette simply by checking the liquid crystal screen constituting the display window (13), thereby making the user feel that they should use the electronic cigarette less to quit smoking. Accordingly, the user can take care of their health and predict when to replace the battery (11) by checking the remaining amount of the battery (11).
- [0043] On the other hand, the intensity of the power applied from the battery (11) of the electronic cigarette varies according to the magnitude of the voltage. The higher the voltage, the higher the heat generation rate and intensity of the heating element ((31)), resulting that the smoke is more quickly generated and the amount of smoke gets high.
- [0044] In consideration of the points above, the present invention has a voltage-up button (14) and a voltage-down button (15) to increase or decrease the voltage of the battery (11) at a position adjacent to the display window of the body (10). The user can try out the smoke first through the straw (23) while pressing the switch, and if the amount and speed of smoke do not suit the user's taste, the user can press the voltage-up button (14) or the voltage-down button (15) to change the voltage of the battery (11) and the voltage of the battery (11) can be adjusted to have the smoke amount and smoke generation speed that the user wants.
- [0045] When the voltage-up button (14) or the voltage-down button (15) is pressed, the changed voltage of the battery (11) can be externally displayed on the text display part of the display window (13), so the user can try out the power of the battery (11) suitable for their preference only at the time of first use. Thereafter, the user can use the electronic cigarette by adjusting the voltage of the battery (11) through the voltage-up button (14) or the voltage-down button (15) before using the electronic cigarette. Also, it is obvious that a battery having a higher voltage than the maximum voltage generated by the voltage-up button (14) must be applied.
- [0046] Although not shown in the drawing, the voltage-up button (14) or the voltage-down button (15) can be easily implemented through components such as a regulator and a variable resistor that are widely used in DC circuits, so illustration and description are omitted.
- [0047] In the disclosure, a device for clearing the text display of the display window (13) is not additionally described. However, these functions can be easily implemented by setting the microprocessor, wherein the microprocessor can be set in advance, for example, to change the state of the battery (11) to be unavailable to be turned on, clear all data at the same time, and display OFF on the text display unit when the switch (12) is pressed four times in succession,

and to change the state of the battery (11) to be turned on, display ON on the text display unit when the switch (12) is pressed four times in succession again.

[0048] Fig. 6 shows an electronic cigarette according to another embodiment of the present invention, wherein the suction pipe (32') is configured instead of the suction wick (32), the spiral plate-shaped heating element (31') is formed in a central part of the suction pipe (32'), and a discharge hole (33) is formed in the upward direction between each pitch of the heating element of the suction pipe (32'). In this case, the interval between each pitch of the heating element (31') should be maintained to such an extent that the medicinal liquid does not leak to the outside due to the surface tension and is held between each pitch of the heating element (31'). This interval is not particularly limited because it depends on the viscosity of the medicinal liquid.

[0049] In the embodiment of the present invention described above, the suction wick (32) made of a fiber material is applied as a member for absorbing the medicinal liquid, but in this case, the medicinal liquid is absorbed by the capillary phenomenon, so the absorption rate of the medicinal liquid is slow. Plus, when the medicinal liquid absorbed in the suction wick (32) is used up, the heating element (31) burns the suction wick (32), providing an unpleasant taste such as a burnt. When the heating element (31) is configured in the form of a coil, there is a possibility that the thickness is thin and easily broken.

[0050] In another embodiment of the present invention, taking this into account, the medicinal liquid can flow quickly through the suction pipe (32'), so the medicinal liquid absorption rate is relatively high, and the spiral plate-shaped heating element (31') also has a relatively wide cross-section, minimizing the possibility of damage. Even if the medicinal liquid flowing into the absorption pipe (32') is discharged to the outside through the discharge hole (33), the medicinal liquid does not leak while in standby since the spiral plate-shaped heating element (31') stays between each pitch by surface tension, and the medicinal liquid quickly evaporates by the heat generated by the heating element (31').

DESCRIPTION OF DRAWINGS

[0051] 10: body	11: battery
12: switch	13: display window
14: voltage-up button	15: voltage-down button
16: male screw	20: medicinal liquid container
21: female screw	22: communication pipe
23: straw	24: see-through window
25: Numbers and scales	30: atomizing chamber
31,31': heating element	32: suction wick
32': suction wick	33: discharge hole
41: piston	42: spiral pipe
51: fixing body	52: rotating body
53: guide protrusion	54: compression coil spring
55: locking ball	56: locking groove

DRAWINGS

Fig. 1

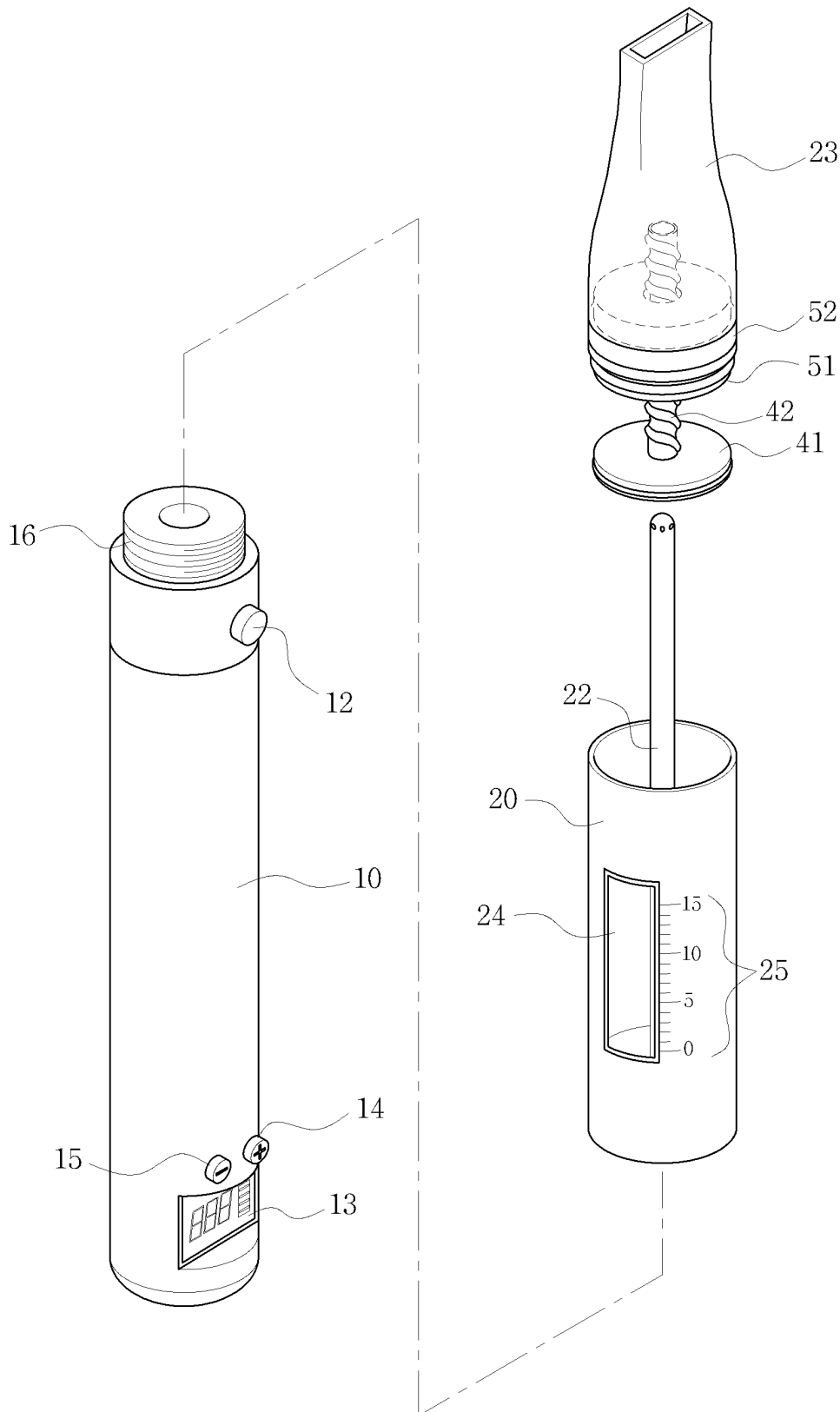


Fig. 2

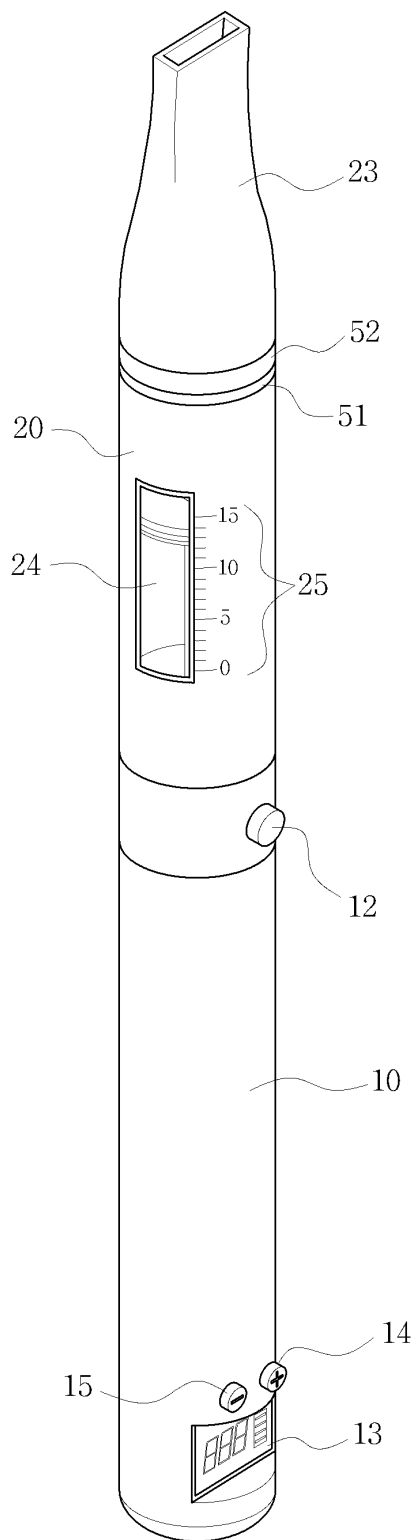


Fig. 3

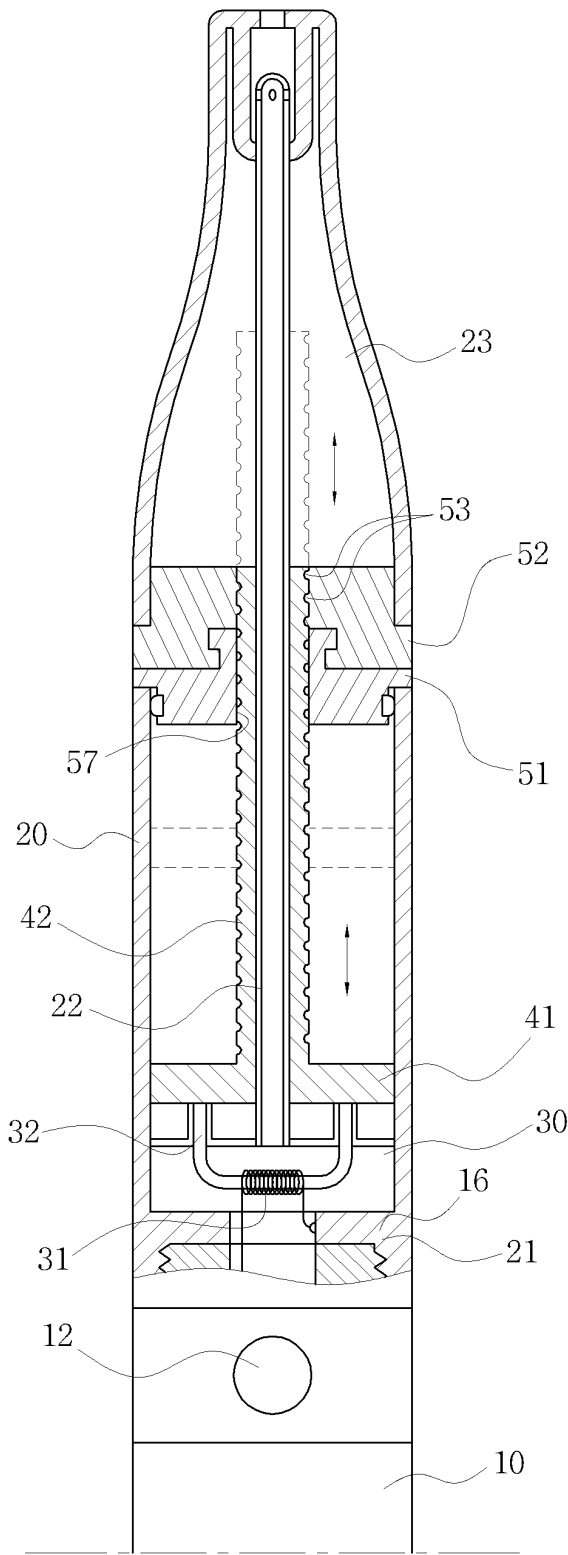


Fig. 4

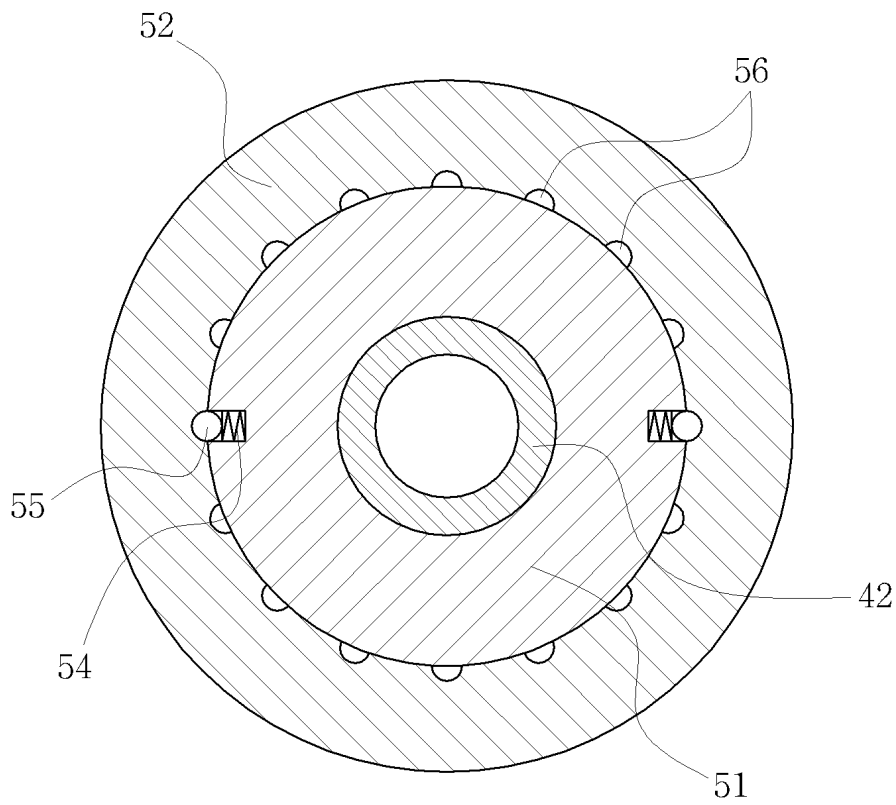


Fig. 5

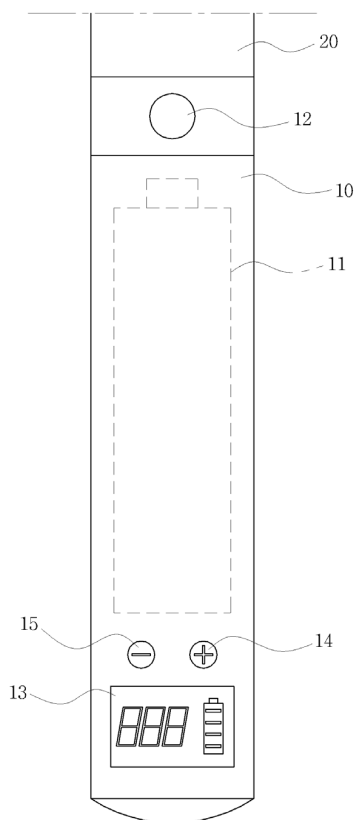


Fig. 6

