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(54) **ATOMIZER AND ELECTRONIC CIGARETTE**

(57) An atomizer comprises a storage member and a cigarette holder detachably connected with the storage member. An inductive chamber and an airflow passage are positioned in the storage member and isolated from each other. An air suction port is defined on the cigarette holder. The air suction port communicates with the inductive chamber and the airflow passage. The inductive chamber is spaced from the airflow passage, which reduces the gas bypass in the inductive chamber and improves the sensitive performance of a sensor. The cigarette holder is separately positioned from the inductive chamber and the airflow passage to facilitate the replacement of the cigarette holder and maintain sanitation. The present disclosure further provides an electronic cigarette having the atomizer.

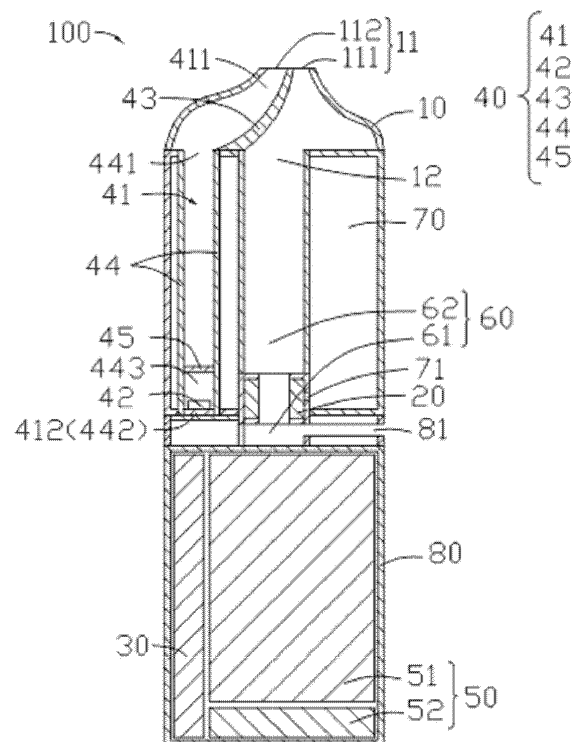


FIG. 1

Description

FIELD

[0001] The present disclosure relates to smoking simulator, and more particularly to an atomizer and an electronic cigarette.

BACKGROUND

[0002] A conventional electronic cigarette automatically controls the turning on and turning off of the electronic cigarette by detecting the suction action of a user, by a sensor arranged in an airflow passage adjacent to an air inlet. However, as the heating member is also located in the airflow passage, and the sensor is located between the heating member and the air inlet, the suction of the user is hindered by the heating member, and thus a greater suction force is needed to allow the airflow in the airflow passage cause the change of air pressure for the detection by the sensor. On the other hand, since the heating member is in liquid communication with a smoke liquid storage member, the smoke liquid in the smoke liquid storage member may leak into the airflow passage through the heating member, and the leaked smoke liquid may block the air inlet. Therefore, the air outside of the electronic cigarette may be blocked from entering into the airflow passage, thus affecting the detection of the sensor. Additionally, the leaked smoke liquid may enter into the sensor, which would cause the sensor to short-circuit. In addition, there may be residual smoke in the airflow passage that can cause the airflow passage to be humid. The sensor over a long period under such environment may affect its service life.

SUMMARY OF THE INVENTION

[0003] Based on it, it is necessary to provide an atomizer with an improvement sensitive performance.

[0004] It is further necessary to provide an electronic cigarette with the atomizer.

[0005] The aspects of the present disclosure are as follows:

[0006] A first aspect of the disclosure provides an atomizer comprising a storage member and a cigarette holder. The cigarette holder is detachably coupled to the storage member. An inductive chamber and an airflow passage are separately defined in the storage member and isolated from each other. An air suction port is defined on the cigarette holder. The air suction port communicates with both of the inductive chamber and the airflow passage.

[0007] In one embodiment, a liquid storage chamber is defined in the storage member. The inductive chamber comprises a first inductive chamber. The first inductive chamber is defined in the storage member and positioned at a side of the liquid storage chamber, or the first inductive chamber is defined in the liquid storage chamber.

The first inductive chamber communicates with the air suction port.

[0008] In one embodiment, the atomizer comprises a smoke outlet tube. The smoke outlet tube is positioned in the liquid storage chamber or at the outside of the liquid storage chamber. A smoke outlet part is positioned in the smoke outlet tube. The smoke outlet part communicates with the air suction port. The airflow passage comprises the smoke outlet part.

[0009] In one embodiment, the cigarette holder is movably sleeved on an end of the storage member. The cigarette holder is alternatively in a locked state or an unlocked state with respect to the storage member by moving the cigarette holder. When the cigarette holder is in the locked state, at least one of the inductive chamber and the airflow passage is closed by the cigarette holder. When the cigarette holder is in the unlocked state, the air suction port communicates with both of the inductive chamber and the airflow passage.

[0010] In one embodiment, the atomizer comprises an atomizer head at least partially received in the airflow passage. The atomizer head communicates with the liquid storage chamber.

[0011] In one embodiment, the atomizer further comprises a base sealing the liquid storage chamber and a lining member positioned at an end of the storage member. The airflow passage comprises an air inlet part. The air inlet part is formed between the base and the lining member. An end of the air inlet part is communicated with an end of the smoke outlet part away from the air suction port.

[0012] In one embodiment, the atomizer head comprises a liquid absorbing member and a heating member contacting with each other.

[0013] In one embodiment, a smoke outlet hole is defined on an upper end of the storage member. A ventilation gap is formed between a lower end surface of a top wall of the cigarette holder and an upper end surface of the storage member. The first inductive chamber has an upper open end. The upper open end of the first inductive chamber is communicated with the air suction port via the ventilation gap. The smoke outlet hole communicates with the air suction port through the ventilation gap.

[0014] In one embodiment, the locked state and the unlocked state between the cigarette holder and the storage member is switched by pulling, pressing, screwing, squeezing, or overturning the cigarette holder.

[0015] A second aspect of the disclosure provides an electronic cigarette with any one of the atomizer of the first aspect of the disclosure.

[0016] In one embodiment, the electronic cigarette further comprises a battery assembly. The battery assembly comprises a second inductive chamber. A sensor is positioned in the second inductive chamber. The inductive chamber further comprises the second inductive chamber.

[0017] In one embodiment, the electronic cigarette further comprises a housing. The battery assembly is re-

ceived in the housing. At least a part of the atomizer is received in the housing. Alternatively, the atomizer is positioned at the outside of the housing. An air inlet communicating with the outside is defined on the electronic cigarette. The air inlet communicates with an end of the airflow passage away from the air suction port.

[0018] In one embodiment, the electronic cigarette further comprises a controller. The battery assembly further comprises a charging module and a battery module. The charging module communicates with the inductive chamber and the outside. The controller and the charging module are electrically connected to the battery module. The sensor is electrically connected to the controller.

[0019] A third aspect of the disclosure provides an atomizer comprising a storage member. An inductive chamber and an airflow passage is separately defined in the storage member and isolated from each other. A liquid storage chamber is defined in the storage member. A liquid injecting hole communicating with the liquid storage chamber is defined on the storage member. A sealing member is positioned in the liquid injecting hole.

[0020] In one embodiment, the number of the liquid injecting hole is at least two. Each liquid injecting hole is positioned with one sealing member. A plurality of the sealing members are in an integrated body.

[0021] In one embodiment, the atomizer further comprises a cigarette holder detachably positioned at an end of the storage member.

[0022] In one embodiment, the inductive chamber comprises a first inductive chamber. The first inductive chamber is defined in the storage member and positioned at a side of the liquid storage chamber, or defined in the liquid storage chamber.

[0023] In one embodiment, the atomizer further comprises a smoke outlet tube. The smoke outlet tube is positioned in the liquid storage chamber, or positioned in the storage member and at the outside of the liquid storage chamber. The airflow passage comprises a smoke outlet part. The smoke outlet part is positioned in the smoke outlet tube.

[0024] In one embodiment, the atomizer further comprises an atomizer head at least partially received in the airflow passage.

[0025] In one embodiment, the sealing member is fixedly connected to the cigarette holder.

[0026] In one embodiment, the atomizer head comprises a liquid absorbing member and a heating member contacting with each other.

[0027] A fourth aspect of the disclosure provides an electronic cigarette with any one of the atomizer of the third aspect of the disclosure.

[0028] In one embodiment, the electronic cigarette further comprises a housing and a battery assembly. The battery assembly is received in the housing. At least a part of the atomizer is received in the housing, alternatively, the atomizer is positioned at the outside of the housing. An air inlet is defined on the electronic cigarette. The air inlet communicates with the outside and the air-

flow passage.

[0029] The atomizer or the electronic cigarette has the following advantages:

[0030] In the atomizer or the electronic cigarette of the present disclosure, the sensor is arranged in the inductive chamber. The inductive chamber and the airflow passage are isolated from each other, which reduces the gas bypass in the inductive chamber and improves the sensitive performance of a sensor when the user inhales. Moreover, the cigarette holder is separately positioned from the inductive chamber and the airflow passage to facilitate the replacement of the cigarette holder and maintain sanitation. And the liquid injecting hole communicating with the liquid storage chamber and the sealing member positioned in the liquid injecting hole are arranged, thus the electronic cigarette can repeat to inject liquid, which increases the service times of the electronic cigarette and reduces the use cost of the electronic cigarette.

BRIEF DESCRIPTION OF THE DRAWINGS

[0031] Many aspects of the disclosure can be better understood with reference to the following drawings. The components in the drawings are not necessarily drawn to scale, the emphasis instead being placed upon clearly illustrating the principles of the disclosure. Moreover, in the drawings, like reference numerals designate corresponding parts throughout the several views.

FIG. 1 is a cross-sectional view of an electronic cigarette in one mode according to a first embodiment.

FIG. 2 is a cross-sectional view of the electronic cigarette according to the first embodiment in another mode.

FIG. 3 is a cross-sectional view of yet another mode of the electronic cigarette according to the first embodiment.

FIG. 4 is a cross-sectional view of an electronic cigarette according to a second embodiment.

FIG. 5 is a stereoscopic view of an electronic cigarette according to a third embodiment.

FIG. 6 is an exploded view of a part of the electronic cigarette shown in FIG. 5.

FIG. 7 is a cross-sectional view of the electronic cigarette shown in FIG. 5.

FIG. 8 is a first cross-sectional view of an electronic cigarette in an unlocked state according to a fourth embodiment.

FIG. 9 is a second cross-sectional view of the elec-

tronic cigarette in a locked state according to the fourth embodiment.

FIG. 10 is a stereoscopic view of the electronic cigarette according to the fourth embodiment.

FIG. 11 is a cross-sectional view of an electronic cigarette according to a fifth embodiment.

FIG. 12 is a first cross-sectional view of an electronic cigarette in an unlocked state according to a sixth embodiment.

FIG. 13 is a second cross-sectional view of the electronic cigarette in a locked state according to the sixth embodiment.

DETAILED DESCRIPTION

[0032] It will be appreciated that for simplicity and clarity of illustration, where appropriate, reference numerals have been repeated among the different figures to indicate corresponding or analogous elements. In addition, numerous specific details are set forth in order to provide a thorough understanding of the embodiments described herein. However, it will be understood by those of ordinary skill in the art that the embodiments described herein may be practiced without these specific details. In other instances, methods, procedures and components have not been described in detail so as not to obscure the related relevant feature being described. The drawings are not necessarily to scale and the proportions of certain parts may be exaggerated to better illustrate details and features. The description is not to be considered as limiting the scope of the embodiments described herein.

[0033] Several definitions that apply throughout this disclosure will now be presented.

[0034] The term "coupled" is defined as connected, whether directly or indirectly through intervening components, and is not necessarily limited to physical connections. The connection may be such that the objects are permanently connected or releasably connected. The term "outside" refers to a region that is beyond the outermost confines of a physical object. The term "substantially" is defined to be essentially conforming to the particular dimension, shape, or other feature that the term modifies, such that the component need have that exact feature. The term "comprising," when utilized, means "including, but not necessarily limited to"; it specifically indicates open-ended inclusion or membership in the so-described combination, group, series and the like.

[0035] The terms "first", "second" and other terms in the present disclosure are only used as textual symbols as the circumstances may require, but such a practice of ordination is not limited to using only these terms. It should be further noted that these terms can be used interchangeably.

[0036] Referring to FIG. 1, in a first embodiment, an

electronic cigarette 100 includes a cigarette holder 10, a heating member 20, a controller 30, a sensor assembly 40, and a battery assembly 50. The cigarette holder 10 has an air suction port 11 in air communication with the air outside of the electronic cigarette 100. The sensor assembly 40 includes an inductive chamber 41 and a sensor 42 arranged in the inductive chamber 41. The heating member 20 and the battery assembly 50 are electrically connected with the controller 30, and the sensor 42 is connected with the controller 30 through signals. The heating member 20 is arranged outside of the inductive chamber 41. The inductive chamber 41 has two ends, one end of the inductive chamber 41 is a first open end 411, and the other end of the inductive chamber 41 is a first sealed end 412. The first open end 411 of the inductive chamber 41 is in air communication with the air suction port 11.

[0037] When a user inhales through the air suction port 11, at least part of air within the inductive chamber 41 is sucked out. Air pressure in the inductive chamber 41 decreases, thus the sensor 42 may detect the change of the pressure, generate a trigger signal, and send the trigger signal to the controller 30. The controller 30 receives the trigger signal, and controls the battery assembly 50 to supply electrical power to the heating member 20.

[0038] When the user stops inhaling through the air suction port 11, the inductive chamber 41 is in air communication with the air outside of the electronic cigarette 100 by the air suction port 11, to restore the air pressure in the inductive chamber 41. Thus, the sensor 42 may sense the restored air pressure, and generate a shutdown signal and transmit the shutdown signal to the controller 30. The controller 30 receives the shutdown signal, and controls the battery assembly 50 to stop supplying electrical power to the heating member 20.

[0039] The sensor assembly 40 further includes a splitter plate 43 and a shutoff piece 44. The splitter plate 43 is arranged in the cigarette holder 10. The shutoff piece 44 is located at one end of the cigarette holder 10 opposite to the air suction port 11, and the shutoff piece 44 is coupled to the splitter plate 43 and one side of an inner wall of the cigarette holder 10. Thus, one side of the inner wall of the cigarette holder 10, one side of the splitter plate 43, and the shutoff piece 44 together form the inductive chamber 41. The other side of the inner wall of the cigarette holder 10 and the other side of the splitter plate 43 together form a connection port 12 opposite to the air suction port 11. The connection port 12 is in air communication with the air suction port 11.

[0040] In one mode, the shutoff piece 44 is a shutoff tube. The shutoff tube has two ends. One end of the shutoff tube is a second open end 441, the other end of the shutoff tube is a second sealed end 442. The second open end 441 of the shutoff tube is coupled to the splitter plate 43 and one side of the inner wall of the cigarette holder 10, respectively, and the second open end 441 of the shutoff tube is located at one end of the cigarette holder 10 opposite to the air suction port 11. The second sealed

end 442 of the shutoff tube is the first sealed end 412 of the inductive chamber 41. The shutoff tube has an inner chamber 443. The inner chamber 443 of the shutoff tube is also a part of the inductive chamber 41. The sensor 42 may be arranged in the inner chamber 443 of the shutoff tube, so a location of the sensor 42 may be changed according to a suitable size and/or shape of the shutoff tube. In the embodiment, the second sealed end 442 of the shutoff tube is arranged adjacent to the controller 30. The sensor 42 is arranged in the inner chamber 443 of the shutoff tube, and located at the second sealed end 442 of the shutoff tube, thus facilitating the electrical connection of the sensor 42 with the controller 30.

[0041] Referring to FIG. 2, in another mode, the shutoff piece 44 is a shutoff plate. The shutoff plate is coupled to the splitter plate 43 and one side of the inner wall of the cigarette holder 10, respectively. The shutoff plate is located at one end of the cigarette holder 10 opposite to the air suction port 11. The shutoff plate is the first sealed end 412 of the inductive chamber 41. By using the shutoff plate, a size of the inductive chamber 41 can be reduced, thus space within the electronic cigarette 100 can be saved. The saved space can be used to store the smoke liquid. The sensor 42 is adjacent to the air suction port 11 by using the shutoff plate, thus facilitating the accuracy of the sensor 42 when detecting inhalations of the user.

[0042] In other embodiments, at least one of the splitter plate 43 and the shutoff piece 44 may be integrally formed with the cigarette holder 10.

[0043] Referring again to FIG. 1, one end of the splitter plate 43 adjacent to the air suction port 11 extends into the air suction port 11, to divide the air suction port 11 into a first air suction port 111 and a second air suction port 112. The first air suction port 111 and the second air suction port 112 are isolated from each other. The first air suction port 111 is in air communication with the connection port 12, and the second air suction port 112 is in air communication with the inductive chamber 41. The smoke generated in the electronic cigarette 100 flows from the connection port 12 to the first air suction port 111, and the air in the inductive chamber 41 is sucked out by the second air suction port 112, which may prevent the smoke entering into the inductive chamber 41 through a connection (not shown) among the connection port 12, the inductive chamber 41, and the air suction port 11, render the air pressure in the inductive chamber 41 more reliable and prevent detection interference to the sensor 42.

[0044] Furthermore, the sensor assembly 40 further includes a film 45 arranged in the inductive chamber 41 and located above the sensor 42. The film 45 may be impermeable and deformable. The arrangement of the film 45 can prevent contamination from the air suction port 11 or the second air suction port 112 from entering into the inductive chamber 41 and polluting the sensor 42, thereby affecting the sensitivity of the sensor 42. When the user inhales through the air suction port 11 or the second air suction port 112, the air within the inductive

chamber 41 and located above the film 45 is at least partially sucked out from the air suction port 11 or the second air suction port 112. Thus, the film 45 is raised upward toward the air suction port 11 or the second air suction port 112, and a space formed between the film 45 and one end of the shutoff piece 44 adjacent to the sensor 42 in the inductive chamber 41 increases, thus reducing air pressure in the space below the film 45 within the inductive chamber 41. The sensor 42 may sense the pressure change, generate the trigger signal, and send the trigger signal to the controller 30. The controller 30 receives the trigger signal, and controls the battery assembly 50 to supply an electrical power to the heating member 20. When the user stops inhaling from the air suction port 11 or the second air suction port 112, the space above the film 45 within the inductive chamber 41 is in air communication with the air outside through the air suction port 11 or the second air suction port 112, and allows the air pressure to be restored. Thus, a deformation of the film 45 is restored, and the pressure in the space below the film 45 within the inductive chamber 41 is restored. The sensor 42 may sense the restored air pressure, and generate the shutdown signal to the controller 30. The controller 30 receives the shutdown signal, and controls the battery assembly 50 to stop supplying the electrical power to the heating member 20.

[0045] The battery assembly 50 includes a battery module 51 and a charging module 52. The controller 30 and the charging module 52 are electrically connected with the battery module 51. The battery module 51 is configured to supply the electric power to the heating member 20 under the control of the controller 30. The charging module 52 is configured to couple to an external power source, to allow the external power source to charge the battery module 51.

[0046] The electronic cigarette 100 further includes an airflow passage 60, a storage member 70, and a housing 80. The airflow passage 60 is isolated from the inductive chamber 41. The storage member 70 is configured to store the smoke liquid. One end of the cigarette holder 10 opposite to the air suction port 11 is coupled to the housing 80. The heating member 20, the controller 30, the battery assembly 50, the airflow passage 60, and the storage member 70 are received in the housing 80. In one embodiment, the sensor assembly 40 is received in the cigarette holder 10. In another embodiment, one part of the sensor assembly 40 is received in the cigarette holder 10, the other part of the sensor assembly 40 is received in the housing 80. The housing 80 defines an air inlet 81. The airflow passage 60 is in air communication with the connection port 12 and the air inlet 81. The heating member 20 is arranged in the airflow passage 60 and is in liquid communication with the storage member 70. A wall of the storage member 70 defines a liquid inlet hole 71 aligned with the heating member 20. The smoke liquid stored in the storage member 70 flows to the heating member 20 through the liquid inlet hole 71. When the battery module 51 supplies the electric power

to the heating member 20, the heating member 20 heats the smoke liquid to form smoke. Air flows into the airflow passage 60 through the air inlet 81, flows through the heating member 20 and mixes with the smoke, then flows to the connection port 12, and finally flows out from the air suction port 11 or the first air suction port 111 when inhaled.

[0047] In the present embodiment, the airflow passage 60 is substantially L-shaped. The airflow passage 60 includes an air inlet part 61 and a smoke outlet part 62. The smoke outlet part 62 is arranged along an axial and lengthways direction of the electronic cigarette 100 and the air inlet part 61 is arranged along a direction extending radially from the center line of the axial direction of the electronic cigarette 100. The heating member 20 is a hollow and open-ended structure. The hollow structure allows communication between the air inlet part 61 and the smoke outlet part 62. One end of the air inlet part 61 opposite to the smoke outlet part 62 is in air communication with the air inlet 81. One end of the smoke outlet part 62 opposite to the air inlet part 61 is in air communication with the connection port 12.

[0048] Referring to FIG. 3, in another mode, the airflow passage 60 includes an air inlet part 61 and a smoke outlet part 62. The air inlet part 61 is arranged along the axial direction of the electronic cigarette 100. The smoke outlet part 62 is arranged along the axial direction of the electronic cigarette 100 and fitted within the air inlet part 61. An upper end of the air inlet part 61 is in air communication with the air inlet 81, and a lower end of the air inlet part 61 is connected to the heating member 20. An upper end of the smoke outlet part 62 is in air communication with the connection port 12, and a lower end of the smoke outlet part 62 is distanced from the heating member 20 for the air inlet part 61 in air communication with the smoke outlet part 62.

[0049] In the present mode, the inductive chamber 41 has two ends. One end of the inductive chamber 41 is the first open end 411, the other end of the inductive chamber 41 is the first sealed end 412. The first open end 411 of the inductive chamber 41 is in air communication with the air suction port 11. The sensor 42 is arranged in the inductive chamber 41, and the heating member 20 is arranged outside of the inductive chamber 41, to allow the suction action of the user directly act on the sensor 42 without obstruction by the heating member 20. On the other hand, the inductive chamber 41 is isolated from the airflow passage 60, thus the detection of the sensor 42 is not affected by the leaked smoke liquid which blocks the air inlet 81. Since a humid environment in the inductive chamber 41 is avoided, service life of this device is extended. The likelihood of short-circuited of the sensor 42 caused by the leakage of the smoke liquid is also reduced.

[0050] Referring to FIG. 4, in a second embodiment, an electronic cigarette 200 includes a cigarette holder 10a, a heating member 20a, a controller 30a, a sensor 42a, a battery assembly 50a, an airflow passage 60a, a

storage member 70a storing a smoke liquid, and a housing 80a. The cigarette holder 10a has two ends. One end of the cigarette holder 10a defines an air suction port 11a, the other end of the cigarette holder 10a is coupled to the housing 80a. The heating member 20a, the controller 30a, the sensor 42a, the battery assembly 50a, the airflow passage 60a, and the storage member 70a are received in the housing 80a. The heating member 20a, the sensor 42a, and the battery assembly 50a are electrically connected with the controller 30a. The housing 80a defines an air inlet 81a. The airflow passage 60a is in air communication with the air suction port 11a and the air inlet 81a. The heating member 20a is arranged in the airflow passage 60a, and is in liquid communication with the storage member 70a. The airflow passage 60a has a passage wall. The passage wall of the airflow passage 60a is at least partially made of a flexible material, to form an elastic portion. The sensor 42a is arranged on the elastic portion and located outside of the airflow passage 60a.

[0051] When the user inhales through the air suction port 11a, an air pressure within the airflow passage 60a decreases, and the elastic portion deforms. Thus, the sensor 42a may sense the deformation, and generate a trigger signal and send the trigger signal to the controller 30a. The controller 30a receives the trigger signal, and controls the battery assembly 50a to supply an electrical power to the heating member 20a. A wall of the storage member 70a defines a liquid inlet hole 71a aligned with the heating member 20a. The smoke liquid stored in the storage member 70a flows to the heating member 20a through the liquid inlet hole 71a. The heating member 20a heats the smoke liquid to create smoke. Air from outside flows into the airflow passage 60a through the air inlet 81a, then mixes with the smoke, and finally flows out from the air suction port 11a.

[0052] When the user stops inhaling through the air suction port 11a, the airflow passage 60a is in air communication with the air outside of the electronic cigarette 200 through the air suction port 11a. The air pressure in the airflow passage 60a is restored and the deformation of the elastic portion is discontinued. Thus, the sensor 42a can sense the restoration of the elastic portion, and generates a shutdown signal to the controller 30a. The controller 30a receives the shutdown signal, and controls the battery assembly 50a to stop supplying the electrical power to the heating member 20a.

[0053] The sensor 42a may be a strain gauge type transducer or a capacitive type transducer.

[0054] In one embodiment, the airflow passage 60a is substantially L-shaped. The airflow passage 60a includes an air inlet part 61a and a smoke outlet part 62a. The air inlet part 61a is arranged radially from the lengthways axis of the electronic cigarette 200, and the smoke outlet part 62a is arranged along the lengthways axis. The heating member 20a is a hollow and open-ended structure. The hollow structure communicates between the air inlet part 61a and the smoke outlet part 62a. One

end of the air inlet part 61a opposite to the smoke outlet part 62a is in air communication with the air inlet 81a. One end of the smoke outlet part 62a opposite to the air inlet part 61a is in air communication with the air suction port 11a. The smoke outlet part 62a is a hollow and open-ended tube. The smoke outlet part 62a is made of a flexible material. The sensor 42a is arranged outside of the wall of the hollow tube.

[0055] The battery assembly 50a includes a battery module 51a and a charging module 52a. The controller 30a and the charging module 52a are electrically connected to the battery module 51a. The battery module 51a is configured to supply the electric power to the heating member 20a under the control of the controller 30a. The charging module 52a is configured to couple to an external power source, to allow the external power source to charge the battery module 51a.

[0056] In this embodiment, the sensor 42a of the electronic cigarette 200 is arranged outside of the airflow passage 60a, to sense inhalations of the user by sensing the deformation of the elastic portion of the airflow passage 60a. By not arranging the sensor 42a in the airflow passage 60a, the service life of the sensor 42a is prolonged due to a less humid environment, and also the likelihood of the sensor 42a being short-circuited caused by the leakage of the smoke liquid is reduced.

[0057] FIGS. 5-7 show an electronic cigarette 300 of a third embodiment. The electronic cigarette 300 includes an atomizer (not labeled in FIGS. 5-7) and a battery assembly 50 electrically connected with the atomizer. When the electronic cigarette 300 is at work, the battery assembly 50 supplies power to the atomizer, so that the smoke liquid can be heated by the atomizer to generate smoke for a user.

[0058] The atomizer includes a storage member 70, a cigarette holder 10 coupled to an end of the storage member 70, a base 90 coupled to an opposite end of the storage member 70, and an atomizer head 21 received in the storage member 70.

[0059] The storage member 70 is substantially a hollow structure defining an opening at the lower end thereof. A liquid storage chamber 75 configured to store smoke liquid is defined in the storage member 70. The liquid storage chamber 75 communicates with the open end of the lower end of the storage member 70. The base 90 is arranged at the lower end of the storage member 70, and seal the open end of the storage member 70, to prevent the smoke liquid from leaking. The atomizer head 21 is received in the liquid storage chamber 75, and the lower end of the atomizer head 21 is connected to the base 90.

[0060] Additionally, the atomizer further includes a smoke outlet tube 63 received in the liquid storage chamber 75. A smoke outlet hole 631 is defined on the upper end of the storage member 70. The upper end of the smoke outlet tube 63 connects to the top wall of the storage member 70, and then communicates with the smoke outlet hole 631. At least a part of the atomizer head 21 is received in the smoke outlet tube 63, and an inner

cavity of the atomizer head 21 communicates with the smoke outlet tube 63. In the third embodiment, at least a part of the atomizer head 21 is received in the smoke outlet tube 63. An inner cavity of the smoke outlet tube 63 forms a smoke outlet part 62. One end of the smoke outlet part 62 communicates with the smoke outlet hole 631, and another end of the smoke outlet part 62 communicates with the atomizer head 21. In other embodiments, a part of the atomizer head 21 can be received in the liquid storage chamber 75 or the atomizer head 21 can be positioned at the outside of the liquid storage chamber 75. Accordingly, the smoke outlet tube 63 is positioned at a side of the liquid storage chamber 75 and received in the storage member 70. If the smoke liquid in the liquid storage chamber 75 can flow into the atomizer head 21, and the two ends of the smoke outlet part 62 are respectively communicated with the smoke outlet hole 631 and the atomizer head 21, the location or structure of the smoke outlet tube 63 is not limited.

[0061] Two liquid injecting holes 72 are defined on the top wall of the storage member 70, for communicating with the liquid storage chamber 75, and the liquid injecting holes 72 are respectively located at two sides of the smoke outlet hole 631. The user can inject smoke liquid into the liquid storage chamber 75 through the liquid injecting holes 72. In order to prevent smoke liquid from leaking via the liquid injecting holes 72, each liquid injecting hole 72 is coupled with a sealing member 73. In the operation of injecting smoke liquid, the cigarette holder 10 and the sealing members 73 are taken off in order, and only one of the injecting holes 72 is used to inject smoke liquid into the liquid storage chamber 75, and another injecting hole 72 keeps to communicate with the outside. Therefore, during injecting smoke liquid through one of the injecting holes 72, the air in the liquid storage chamber 75 can be discharged from the other injecting hole 72. The pressure difference between internal and external of the liquid storage chamber 75 can be constant, and the speed of the injecting smoke liquid passing through the liquid injecting hole 72 can be guaranteed, which is convenient for the liquid injection operation. The sealing member 73 can be made of silicone or rubber. When the number of liquid injecting hole 72 is at least two, during injecting smoke liquid through at least one injecting hole 72, it should be guaranteed that at least one other liquid injecting hole 72 can communicate with the outside. In other embodiments, the number of the liquid injecting hole 72 can be one. In the third embodiment, the volume of the electronic cigarette 300 is small, if only one liquid injecting hole 72 is defined, the air in the liquid storage chamber 75 will be hard to be discharged, and the operation of liquid injection will be inconvenient. At least two liquid injecting holes 72 can solve problems of liquid injecting and air discharging, thus the operation of liquid injection is more convenient.

[0062] In the third embodiment, atomizer head 21 includes a heating member 20 and a liquid absorbing member (not labeled in figures) contacting with each other.

The liquid absorbing member is in liquid communication with the liquid storage chamber 75, so that the smoke liquid in the liquid storage chamber 75 can enter into the atomizer head 21 and contact the heating member 20. During using the electronic cigarette 300, the battery assembly 50 supplies power to the heating member 20, and the heating member 20 generates heat to atomize the smoke liquid to generate smoke. The specific structure of the atomizer head 21 is not limited in the third embodiment, the atomizer head 21 only needs to satisfy the function of atomizing smoke liquid into smoke. For example, in other embodiments, the heating member 20 of the atomizer head 21 can include a heating sheet, and the liquid absorbing member can be omitted.

[0063] Referring to FIG. 5, in the third embodiment, an inductive chamber 41 is defined at a side of the storage member 70. The inductive chamber 41 is configured to generate physical characteristic changes, and conduct the physical characteristic changes to a sensor. The physical characteristic includes but are not limited to air pressure or air flow. For example, the user creates a negative pressure in the induction chamber 41 by inhaling, and the negative pressure can be transmitted to the sensor and detected by the sensor. In the third embodiment, the inductive chamber 41 includes a first inductive chamber 413. Furthermore, the first inductive chamber 413 is defined on the storage member 70 along the axial direction of the electronic cigarette 300, and positioned at a side of the liquid storage chamber 75. The upper end of the first inductive chamber 413 penetrates the upper end surface of the storage element 70, and the lower end of the first inductive chamber 413 penetrates the lower end surface of the storage element 70. In other embodiments, the first inductive chamber 413 can be positioned inside the liquid storage chamber 75. For example, a through tube can be positioned in the liquid storage chamber 75 and along the axial direction of the storage member 70, and the first inductive chamber 413 is formed by the inner cavity of the through tube.

[0064] The cigarette holder 10 is substantially a hollow structure with an opening at the lower end thereof. The cigarette holder 10 is sleeved on the upper end of the storage member 70. An air suction port 11 is defined on the cigarette holder 10. A ventilation gap 110 is defined between the lower end surface of the top wall of the cigarette holder 10 and the upper end surface of the storage member 70. The upper end opening of the first inductive chamber 413 communicates with the air suction port 11 through the ventilation gap 110. The smoke outlet hole 631 communicates with the air suction port 11 through the air ventilation gap 110. In the third embodiment, the cigarette holder 10 is latched to the storage member 70. In other embodiments, the cigarette holder 10 can be detachably connected to the storage member 70 by other ways, such as threaded connection or magnetic connection. The air suction port 11 can be formed by one or more holes defined on the cigarette holder 10.

[0065] The battery assembly 50 includes a battery

module 51 and a charging module 52. The electronic cigarette 300 further includes a housing 80 and a controller 30. The battery module 51, the charging module 52, and the controller 30 are received in the housing 80.

5 The controller 30 and the charging module 52 are electrically connected with the battery module 51. The controller 30 controls the battery module 51 supply power to the heating member 20. The charging module 52 is configured to connect an external power source, so that the battery module 51 can be charged by the external power source. In the third embodiment, the controller 30 and the charging module 52 are respectively positioned at two ends of the battery module 51. In other embodiments, the location of the controller 30 and the charging module 52 are not limited.

[0066] In the third embodiment, at least a part of the storage member 70 is received in the housing 80. That is, at least a part of the atomizer is received in the housing 80. In other embodiments, the atomizer can be positioned at the outside of the housing 80. The atomizer further includes a lining member 91. The lining member 91 is positioned inside the lower end of the storage member 70, and under the base 90. The upper end surface of the lining member 91 abuts against the base 90, so that the base 90 is fixed. The upper end surface of the lining member 91 defines a groove. A cavity is defined between the groove and the lower end surface of the base 90, and the cavity forms an air inlet part 61. An air inlet 81 communicating with the outside is defined on the housing 80. An end of the air inlet part 61 communicates with the air inlet 81, another end of the air inlet part 61 communicates with an end of the smoke outlet part 62 away from the air suction port 11. The air inlet part 61 and the smoke outlet part 62 form an airflow passage 60, so that the atomizer head 21 is located in the airflow passage 60, and the airflow passage 60 communicates with the air suction port 11. When the user inhales the electronic cigarette 300, external air enters the airflow passage 60 through the air inlet 81, and when the external air passes through the inside of the atomizer head 21, the smoke is taken out and eventually enters the user's mouth through the air suction port 11 of the cigarette holder 10.

[0067] Furthermore, a cavity (not labeled in figures) with an opening at the lower end thereof is defined at the lower end surface of the storage member 70 along the axial direction of the storage member 70. The cavity communicates with the air inlet part 61 through the lower end opening. An air inlet port 74 communicating with the cavity and the air inlet 81 is defined on the sidewall of the storage member 70, so that the external air can flow into the airflow passage 60 through the air inlet 81. That is, the external air can enter the electronic cigarette 300 through the storage member 70. The lining member 91 and the base 90 can be made of but not limited to plastic, rubber or other materials capable of sealing the smoke liquid.

[0068] The battery assembly 50 further includes a connecting member 53 received in the housing 80. The at-

omizer connects with the battery assembly 50 via the connecting member 53. Specifically, the connecting member 53 is positioned at the lower end of the storage member 70. An electrode (not labeled in figures) is attached to the connecting member 53. The electrode includes a first electrode 531 and a second electrode 532. One of the first electrode 531 and the second electrode 532 is connected with a positive pole of the battery module 51, and another one of the first electrode 531 and the second electrode 532 is connected with a negative pole of the battery module 51.

[0069] Additionally, the atomizer further includes a base cover 92, a first pole 921, and a second pole 922. The base cover 92 is positioned at the lower end of the storage member 70, and the base cover 92 is under the lining member 91. The first pole 921 corresponds to the first electrode 531, and the second pole 922 corresponds to the second electrode 532. Specifically, the upper end of the first pole 921 sequentially passes through the base cover 92, the lining member 91, and the base 90, and then contacts with an end of the heating member 20 and is electrically connected to the heating member 20. The upper end of the second pole 922 sequentially passes through the base cover 92, the lining member 91, and the base 90, and then contacts with another end of the heating member 20 and is electrically connected to the heating member 20. The lower end of the first pole 921 and the lower end of the second pole 922 are positioned at the external of the base cover 92. When the lower end of the atomizer is plugged in the housing 80, the first electrode 531 is contacted with and electrically connected to the first pole 921. The second electrode 532 is contacted with and electrically connected to the second pole 922. Thus the battery module 51 can supply power to the heating member 20.

[0070] In the third embodiment, a second inductive chamber 414 is positioned in the connecting member 53. The lower end of the second inductive chamber 414 is closed, and the upper end of the second inductive chamber 414 communicates with the upper end surface of the connecting member 53. That is, the lower end of the second inductive chamber 414 is a closed end, and the upper end is an open end. When the atomizer is assembled, the first inductive chamber 413 communicates with the second inductive chamber 414. Furthermore, a through hole (not labeled in figures) is defined on the lining member 91, and the lower end of the first inductive chamber 413 communicates with the upper end of the second inductive chamber 414 via the through hole. The inductive chamber 41 with a closed lower end and an opening upper end is formed by the first inductive chamber 413 and the second inductive chamber 414, and the open end of the inductive chamber 41 communicates with the air suction port 11.

[0071] The electronic cigarette 300 of the present disclosure further includes a sensor 42. The sensor 42 is positioned in the inductive chamber 41. The sensor 42 is connected to the controller 30 with signals and config-

ured to detect the change of the air pressure in the inductive chamber 41. In the third embodiment, the sensor 42 is positioned in the second inductive chamber 414. In other embodiments, the sensor 42 can be positioned in the first inductive chamber 413, and connected with the battery assembly 50 via other electronic elements.

[0072] When the user inhales through the air suction port 11, the air in the inductive chamber 41 is at least partially sucked out, and the air pressure in the inductive chamber 41 is reduced. The sensor 42 detects the air pressure change, and generates a trigger signal and sends the trigger signal to the controller 30. The controller 30 receives the trigger signal and controls the battery assembly 50 to provide power to the heating member 20.

[0073] When the user stops inhaling and removes the mouth from the air suction port 11, the inductive chamber 41 communicates with the outside through the air suction port 11, so that the air pressure in the inductive chamber 41 is recovered. The sensor 42 detects the recovered air pressure and generates a shutdown signal. The shutdown signal is sent to the controller 30 by the sensor 42. The controller 30 receives the shutdown signal and controls the battery assembly 50 to stop providing power to the heating member 20.

[0074] In other embodiments, except for the open end communicating with the air suction port 11, other open ends can be defined and configured to let the inductive chamber 41 communicate with the outside. For example, the inductive chamber 41 has a first open end communicating with the air suction port 11 and a second open end communicating with the outside. In a first mode, when the user inhales on the air suction port 11, the external air flows into the inductive chamber 41 via the second open end, passes by the sensor 42, and flows out through the first open end and the air suction port 11 in turn. The sensor 42 can detect the flowing of the airflow in the inductive chamber 41, and generate a trigger signal. In a second mode, the sensor 42 separates the inductive chamber 42 into a first chamber and a second chamber. The first chamber communicates with the first open end, and the second chamber communicates with the second open end. When the user inhales on the air suction port 11, at least a part of the air in the first chamber is sucked out via the first open end and the air suction port 11. Thus, the first chamber is in a negative pressure state. The second chamber is in normal pressure state by keeping a communication with the outside through the second open end. As a result, a pressure difference is generated at the two sides of the sensor 42. The sensor 42 can detect the pressure difference and generate a trigger signal.

[0075] For the first mode, specifically, the charging module 52 includes an USB port. The USB port can be configured for charging the battery module 51, and configured as an external air inlet port for the inductive chamber 41. The sensor 42 is positioned at the inner wall of the inductive chamber 41. When the user inhales, the air enters the airflow passage 60, and enters the inductive

chamber 41 through the USB port, and then flows out through the inductive chamber 41 and the air suction port 11. The sensor 42 detects the flowing of the airflow in the inductive chamber 41, and generates a trigger signal and sends the trigger signal to the controller 30. The controller 30 controls the battery assembly 50 to provide power to the heating member 20. The sensor 42 further can be an air flow sensor or air pressure sensor, which is configured to detect air flow changes in the inductive chamber 41.

[0076] In other embodiments, the inductive chamber 41 is positioned in the storage member 70 as the first embodiment. The lower end of the inductive chamber 41 is closed, and the upper end of the inductive chamber 41 passes through the upper end surface of the storage member 70. Alternatively, the passage wall of the airflow passage 60 is at least partially made of a flexible material to form an elastic portion, as the second embodiment. The sensor 42 is positioned on the elastic portion, and located at the outside of the airflow passage 60. Preferably, the sensor 42 is a resistive strain sensor or a capacitive sensor.

[0077] The first inductive chamber 413 of the inductive chamber 41 is positioned at the outside of the liquid storage chamber 75, so that a temperature of the smoke liquid in the liquid storage chamber 75 will not be greatly reduced due to the external cold air, to avoid affecting atomization. The smoke outlet part 62 of the airflow passage 60 is located in the liquid storage chamber 75. A part of hot smoke flowing from the atomizer head 21 can transfer heat to the smoke liquid, so that the smoke liquid is preheated, and the thermal efficiency is improved, and further the atomization efficiency is improved. At the same time, a temperature of smoke at the air suction port 11 is reduced, to prevent from scalding users.

[0078] In the third embodiment, an end of the inductive chamber 41 is an open end, another end of the inductive chamber 41 is a closed end. The open end of the inductive chamber 41 communicates with the air suction port 11. The sensor 42 is positioned in the inductive chamber 41. The heating member 20 is positioned at the outside of the inductive chamber 41. Therefore, inhaling operations can be directly acted on the sensor 42, without hindrance of the heating member 20. The inductive chamber 41 is separately positioned from the airflow passage 60, which reduces the gas bypass in the inductive chamber 41 and improves the sensitive performance of the sensor 42. On the other hand, detection will not be affected due to the air inlet 81 clogged with leaked smoke liquid. Additionally, the sensor 42 can be avoided being affected by the wet environment in the airflow passage 60, which may reduce the service life of the sensor 42. The leaked smoke liquid can also be prevented from causing a short circuit in the sensor 42.

[0079] FIGS. 8-10 show an electronic cigarette 400 of a fourth embodiment. The differences between the electronic cigarette 400 and the electronic cigarette 300 of the third embodiment are illustrated as follows. The cig-

arette holder 10 is movably sleeved on the upper end of the storage member 70 along the axial direction of the electronic cigarette 400. A fitting relationship between the cigarette holder 10 and the storage member 70 can be switched between a locked relationship and an unlocked relationship by moving the cigarette holder 10. In other words, the cigarette holder 10 can be switched between a locked state and an unlocked state in relative to the storage member 70. When the cigarette holder 10 is in the locked state, at least one of the inductive chamber 41 and the airflow passage 60 is closed by the cigarette holder 10. When the cigarette holder 10 is in the unlocked state, the air suction port 11 communicates with both of the inductive chamber 41 and the airflow passage 60.

[0080] In the fourth embodiment, the air suction port 11 are staggered with both of the air outlet end of the inductive chamber 41 and the air outlet end of the airflow passage 60. Referring to FIG. 9, when the cigarette holder 10 and the storage member 70 are in the locked relationship, the ventilation gap 110 is not existed between the cigarette holder 10 and the storage member 70. The lower end surface of the top wall of the cigarette holder 10 closes the air outlet end of the inductive chamber 41 and the air outlet end of the airflow passage 60 at the same time. Therefore, the user cannot inhale through the air suction port 11 of the cigarette holder 10. Referring to FIG. 8, when the cigarette holder 10 and the storage member 70 are in the unlocked relationship, the ventilation gap 110 is existed between the cigarette holder 10 and the storage member 70, and the air outlet end of the inductive chamber 41 and the air outlet end of the airflow passage 60 are communicated with the air suction port 11 of the cigarette holder 10 through the ventilation gap 110. Therefore, the user can inhale.

[0081] In the fourth embodiment, the user can switch the fitting relationship (locked state and unlocked state) between the cigarette holder 10 and the storage member 70 by pulling or pressing the cigarette holder 10 for a certain distance. In other embodiments, the user can switch the fitting relationship (locked state and unlocked state) between the cigarette holder 10 and the storage member 70 by other methods such as screwing, squeezing, or overturning.

[0082] In other embodiments, the air suction port 11 can communicate with only one of the air outlet end of the inductive chamber 41 and the air outlet end of the airflow passage 60. When the cigarette holder 10 and the storage member 70 are in the locked relationship, the cigarette holder 10 closes one of the inductive chamber 41 and the airflow passage 60, and the electronic cigarette 400 is prevented from working. When the cigarette holder 10 and the storage member 70 are in the unlocked relationship, the air suction port 11 communicates with the inductive chamber 41 and the airflow passage 60 at the same time. Therefore, in the fourth embodiment, when the user inhales, the cigarette holder 10 needs to be moved to let the cigarette holder 10 and the storage element 70 are in the unlocking relationship, so

that the electronic cigarette 400 can perform inhaling operations. The electronic cigarette 400 has a child-proof function.

[0083] Additionally, referring to FIG. 8 and FIG. 10, in the fourth embodiment, when the cigarette holder 10 and the storage member 70 are in the unlocked relationship, a space 82 is defined between the cigarette holder 10 and the housing 80. The space 82 is convenient for the cigarette holder 10 switching states between the unlocked and locked states. When the cigarette holder 10 and the storage member 70 are in the locked state, the cigarette holder 10 abuts against the housing 80 to remind the user that the cigarette holder 10 has been moved into right place.

[0084] FIG. 11 shows an electronic cigarette 500 of a fifth embodiment. The differences between the electronic cigarette 500 and the electronic cigarette 300 of the third embodiment are illustrated as follows. A plurality of sealing members 73 of the electronic cigarette 500 are in an integrated body. The sealing members 73 are fixedly connected to the lower end surface of the top wall of the cigarette holder 10. The sealing members 73 and the cigarette holder 10 can be fixedly connected by a glue connection or fasteners, such as bolts and screws. In other embodiments, the sealing members 73 and the cigarette holder 10 can be integrated together. Therefore, when the user needs to inject smoke liquid into the liquid storage chamber 75, the sealing members 73 are pulled out with the cigarette holder 10 from the liquid injecting holes 72. The structure of the electronic cigarette 500 is simpler and the operation of injecting smoke liquid is more convenient.

[0085] FIG. 12 and FIG. 13 show an electronic cigarette 600 of a sixth embodiment. The differences between the electronic cigarette 600 and the electronic cigarette 300 of the third embodiment are illustrated as follows. The electronic cigarette 600 combines technical features of the electronic cigarette 400 and the electronic cigarette 500. The cigarette holder 10 is movably sleeved on the upper end of the storage member 70 along the axial direction of the electronic cigarette 600. A fitting relationship between the cigarette holder 10 and the storage member 70 can be switched between a locked relationship and an unlocked relationship by moving the cigarette holder 10. A plurality of sealing members 73 are in an integrated body, and the sealing members 73 are fixedly connected to the lower end surface of the top wall of the cigarette holder 10. Specific working processes are same as the fourth embodiment and the fifth embodiment. During switching the fitting relationship between the cigarette holder 10 and the storage member 70, the sealing members 73 always close the liquid injecting holes 72. Only when the user needs to inject smoke liquid and pull out the cigarette holder 10, the sealing members 73 can be pulled out of the liquid injecting holes 72 with the cigarette holder 10. The electronic cigarette 600 has a child-proof function, and the structure of the electronic cigarette 600 is simplified, so that the operation of injecting smoke liq-

uid is more convenient.

[0086] The embodiments shown and described above are only examples. Many details are often found in the art such as the other features of an electronic cigarette. Therefore, many such details are neither shown nor described. Even though numerous characteristics and advantages of the embodiments have been set forth in the foregoing description, together with details of the structure and function of the embodiments, the present disclosure is illustrative only, and changes may be made in details, including in the matters of shape, size, and arrangement of parts within the principles of the embodiments to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed.

Claims

1. An atomizer comprising:
 - a storage member (70, 70a); and
 - a cigarette holder (10, 10a) detachably coupled to the storage member (70, 70a),
 - wherein an inductive chamber (41) and an air-flow passage (60, 60a) are separately defined in the storage member (70, 70a) and isolated from each other, an air suction port (11, 11a) is defined on the cigarette holder (10, 10a), the air suction port (11, 11a) communicates with both of the inductive chamber (41) and the airflow passage (60, 60a).
2. The atomizer of claim 1, wherein a liquid storage chamber (75) is defined in the storage member (70, 70a), the inductive chamber (41) comprises a first inductive chamber (413), and the first inductive chamber (413) is defined in the storage member (70, 70a) and positioned at a side of the liquid storage chamber (75), or the first inductive chamber (413) is defined in the liquid storage chamber (75), the first inductive chamber (413) communicates with the air suction port (11, 11a).
3. The atomizer of claim 2, wherein the atomizer comprises a smoke outlet tube (63), the smoke outlet tube (63) is positioned in the liquid storage chamber (75) or at the outside of the liquid storage chamber (75), a smoke outlet part (62, 62a) is positioned in the smoke outlet tube (63), the smoke outlet part (62, 62a) communicates with the air suction port (11, 11a), and the airflow passage (60, 60a) comprises the smoke outlet part (62, 62a).
4. The atomizer of claim 1, wherein the cigarette holder (10, 10a) is movably sleeved on an end of the storage member (70, 70a), the cigarette holder (10, 10a) is alternatively in a locked state or an unlocked state

- with respect to the storage member (70, 70a) by moving the cigarette holder (10, 10a); when the cigarette holder (10, 10a) is in the locked state, at least one of the inductive chamber (41) and the airflow passage (60, 60a) is closed by the cigarette holder (10, 10a); when the cigarette holder (10, 10a) is in the unlocked state, the air suction port (11, 11a) communicates with both of the inductive chamber (41) and the airflow passage (60, 60a).
5. The atomizer of claim 3, wherein the atomizer comprises an atomizer head (21) at least partially received in the airflow passage (60, 60a), the atomizer head (21) communicates with the liquid storage chamber (75).
 6. The atomizer of claim 3, wherein the atomizer further comprises a base (90) sealing the liquid storage chamber (75) and a lining member (91) positioned at an end of the storage member (70, 70a), the airflow passage (60, 60a) comprises an air inlet part (61, 61a), the air inlet part (61, 61a) is formed between the base (90) and the lining member (91), an end of the air inlet part (61, 61a) is communicated with an end of the smoke outlet part (62, 62a) away from the air suction port (11, 11a).
 7. The atomizer of claim 5, wherein the atomizer head (21) comprises a liquid absorbing member and a heating member (20, 20a) contacting with each other.
 8. The atomizer of claim 2, wherein a smoke outlet hole (631) is defined on an upper end of the storage member (70, 70a), a ventilation gap (110) is formed between a lower surface of a top wall of the cigarette holder (10, 10a) and an upper end surface of the storage member (70, 70a), the first inductive chamber (413) has an upper open end, the upper open end of the first inductive chamber (413) is communicated with the air suction port (11, 11a), the smoke outlet hole (631) communicates with the air suction port (11, 11a) through the ventilation gap (110).
 9. The atomizer of claim 4, wherein the locked state and the unlocked state between the cigarette holder (10, 10a) and the storage member (70, 70a) is switched by pulling, pressing, screwing, squeezing, or overturning the cigarette holder (10, 10a).
 10. An electronic cigarette (100, 200, 300, 400, 500, 600) comprising an atomizer of any one of claims 1-9.
 11. The electronic cigarette (100, 200, 300, 400, 500, 600) of claim 10, wherein the electronic cigarette (100, 200, 300, 400, 500, 600) further comprises a battery assembly (50, 50a), the battery assembly (50, 50a) comprises a second inductive chamber (414), a sensor (42, 42a) is positioned in the second inductive chamber (414), and the inductive chamber (41) further comprises the second inductive chamber (414).
 12. The electronic cigarette (100, 200, 300, 400, 500, 600) of claim 11, wherein the electronic cigarette (100, 200, 300, 400, 500, 600) further comprises a housing (80, 80a), the battery assembly (50, 50a) is received in the housing (80, 80a), at least a part of the atomizer is received in the housing (80, 80a), alternatively, the atomizer is positioned at the outside of the housing (80, 80a), an air inlet (81, 81a) communicating with the outside is defined on the electronic cigarette (100, 200, 300, 400, 500, 600), the air inlet (81, 81a) communicates with an end of the airflow passage (60, 60a) away from the air suction port (11, 11a).
 13. The electronic cigarette (100, 200, 300, 400, 500, 600) of claim 11, wherein the electronic cigarette (100, 200, 300, 400, 500, 600) further comprises a controller (30, 30a), the battery assembly (50, 50a) further comprises a charging module (52, 52a) and a battery module (51, 51a), the charging module (52, 52a) communicates with the inductive chamber (41) and the outside, the controller (30, 30a) and the charging module (52, 52a) are electrically connected to the battery module (51, 51a), the sensor (42, 42a) is electrically connected to the controller (30, 30a).
 14. An atomizer, comprising:
 - a storage member (70, 70a),
 - wherein an inductive chamber (41) and an airflow passage (60, 60a) is separately defined in the storage member (70, 70a) and isolated from each other, a liquid storage chamber (75) is defined in the storage member (70, 70a), a liquid injecting hole (72) communicating with the liquid storage chamber (75) is defined on the storage member (70, 70a), and a sealing member (73) is positioned in the liquid injecting hole (72).
 15. The atomizer of claim 14, wherein the number of the liquid injecting hole (72) is at least two, each liquid injecting hole (72) is positioned with one sealing member (73), a plurality of sealing members (73) are in an integrated body.

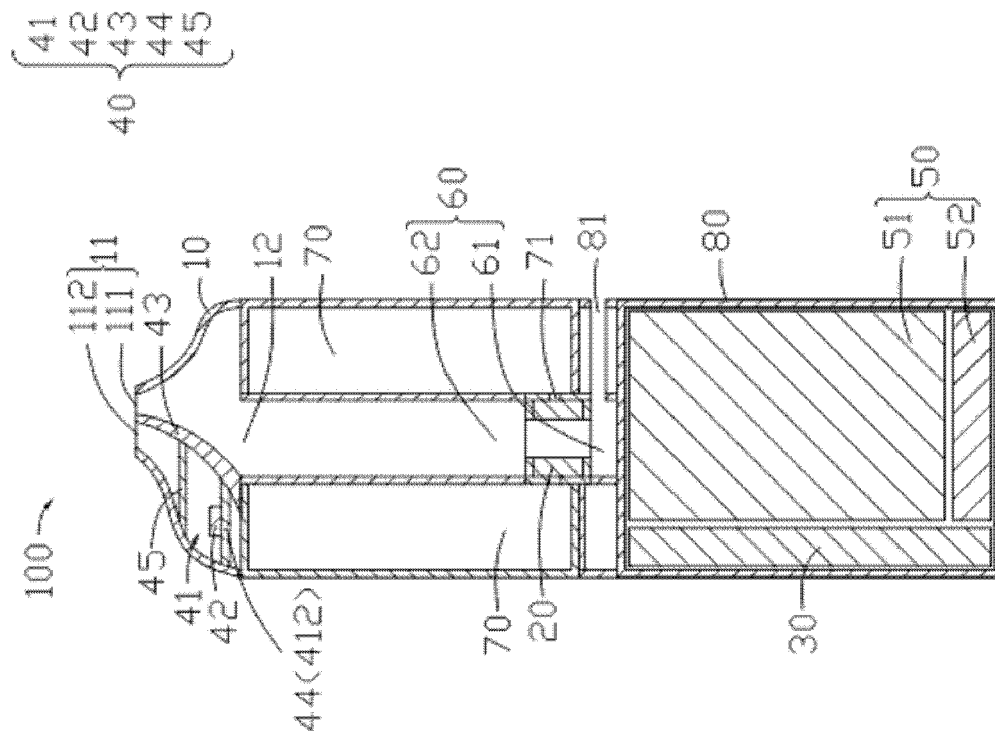


FIG. 2

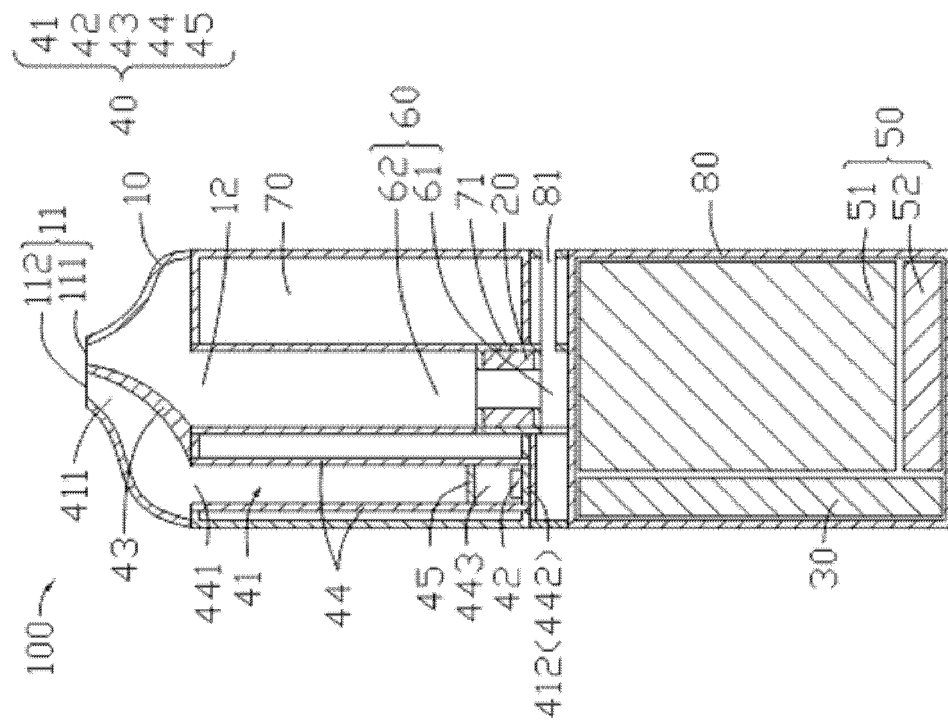


FIG. 1

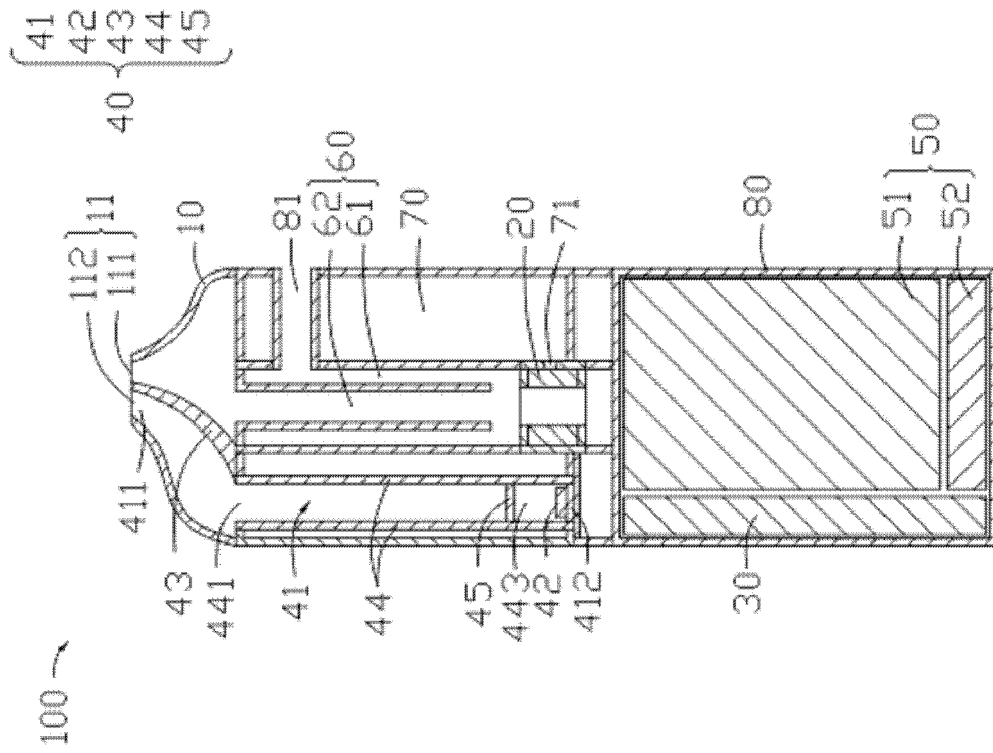


FIG. 3

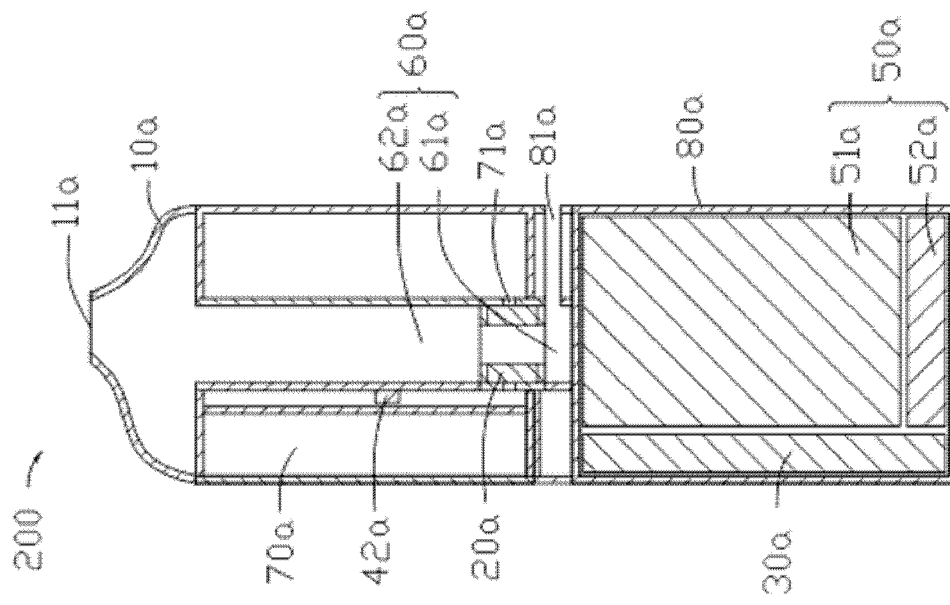


FIG. 4

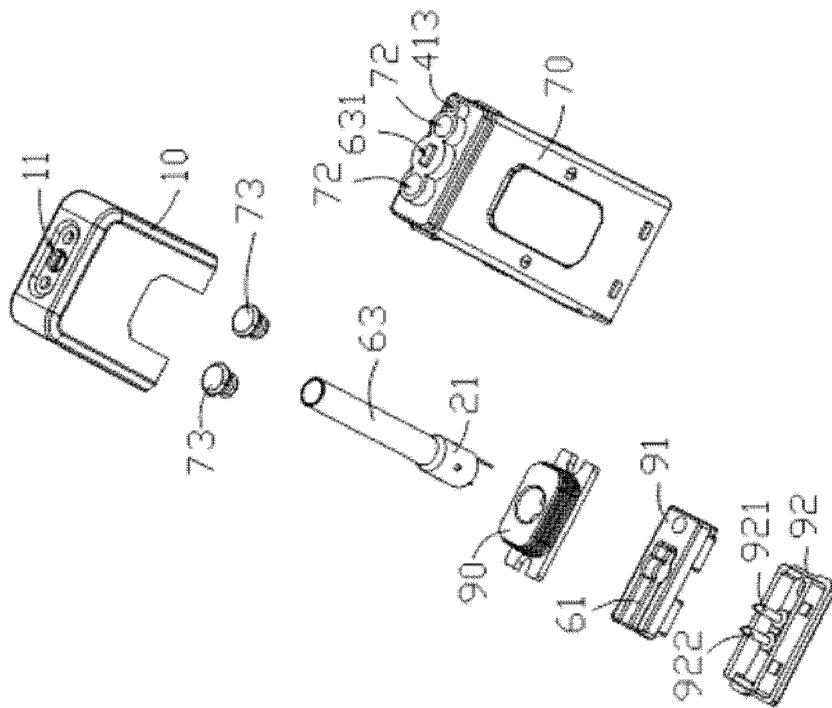


FIG. 6

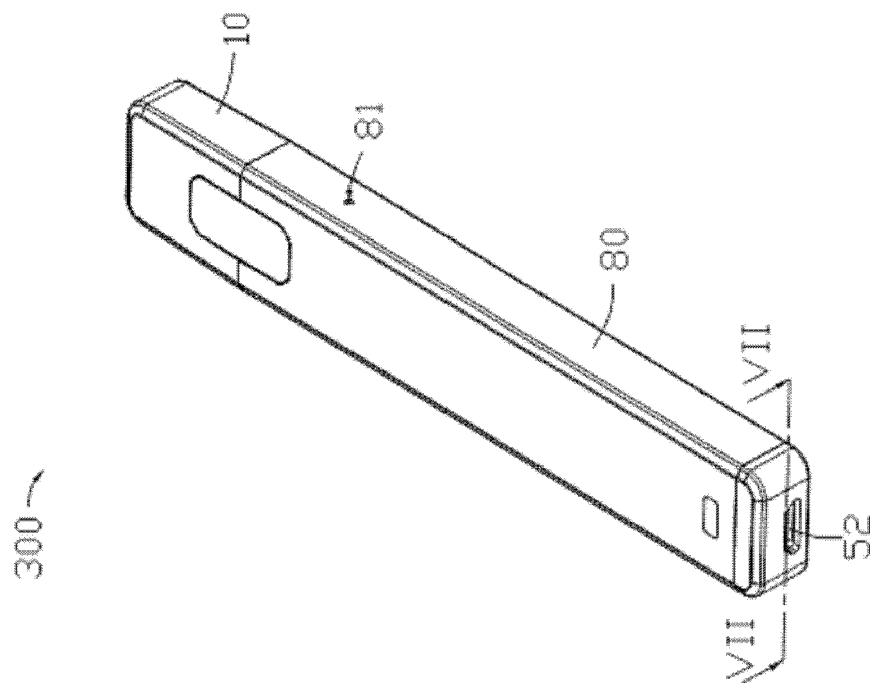


FIG. 5

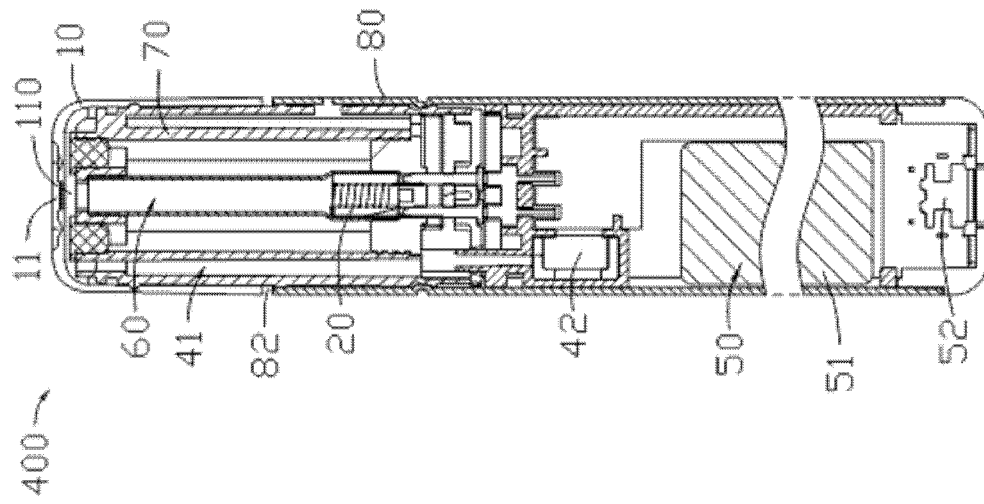


FIG. 8

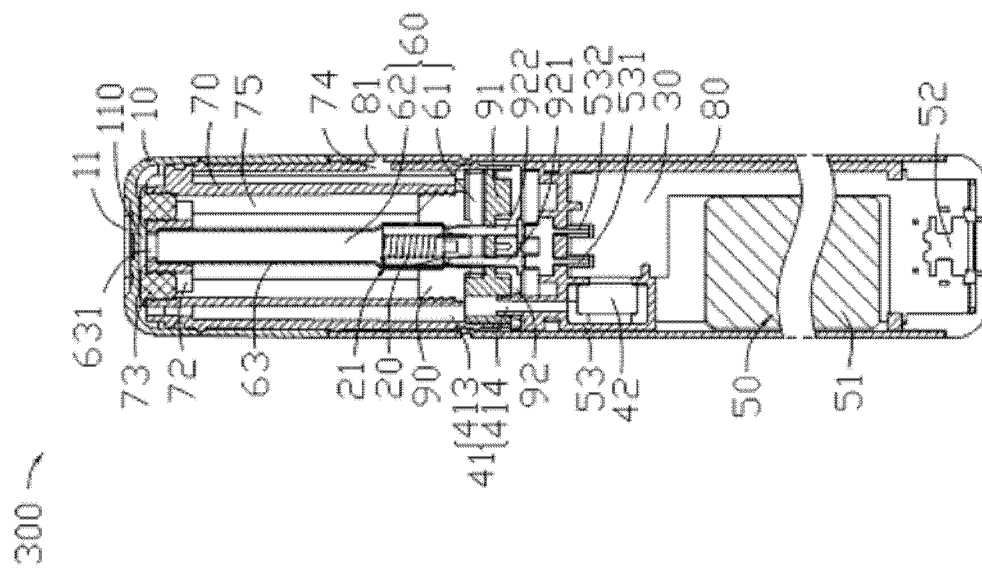


FIG. 7

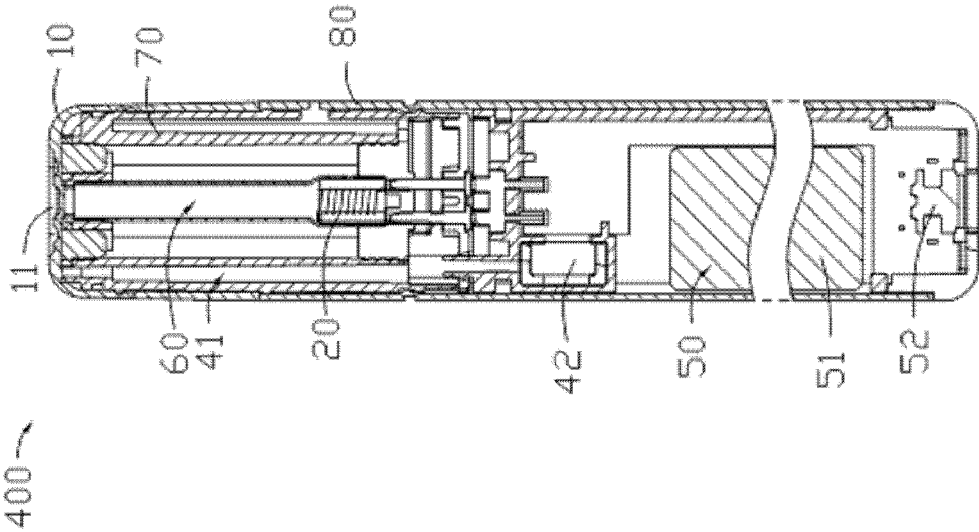


FIG. 9

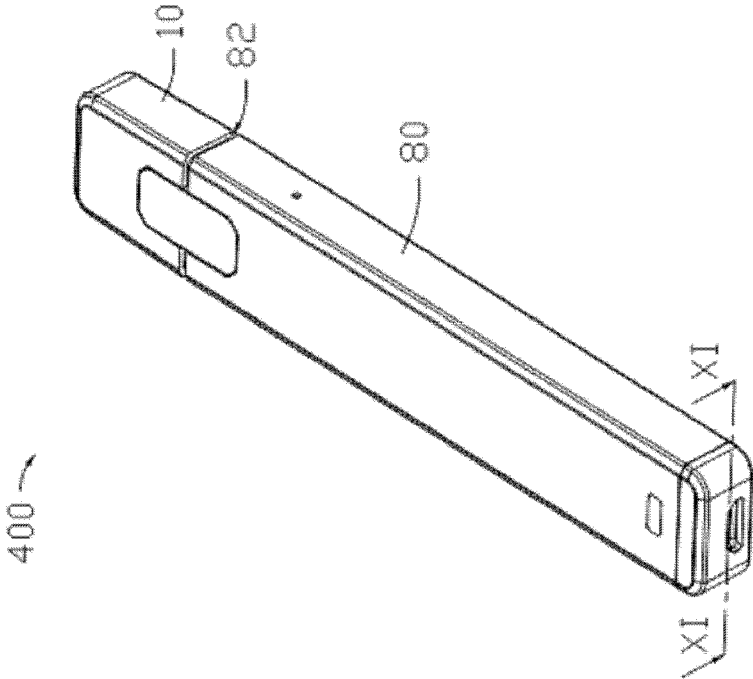


FIG. 10

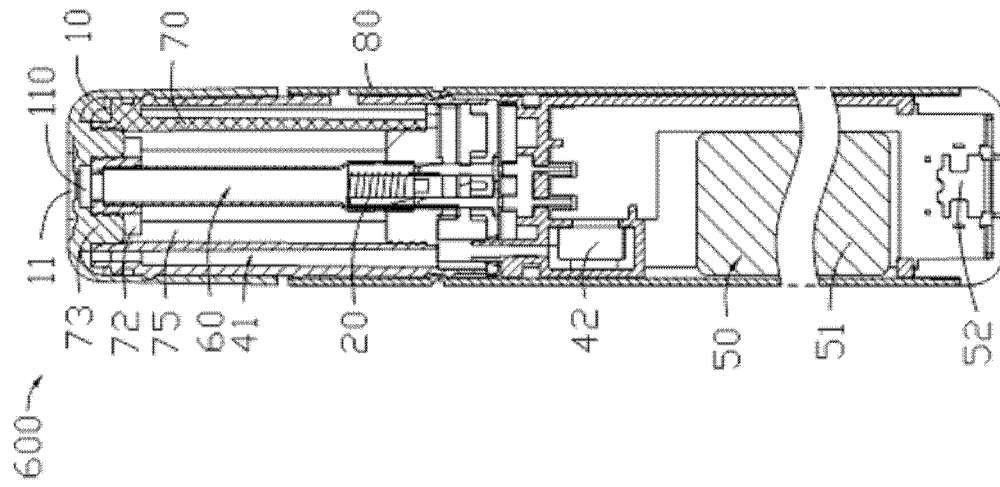


FIG. 11

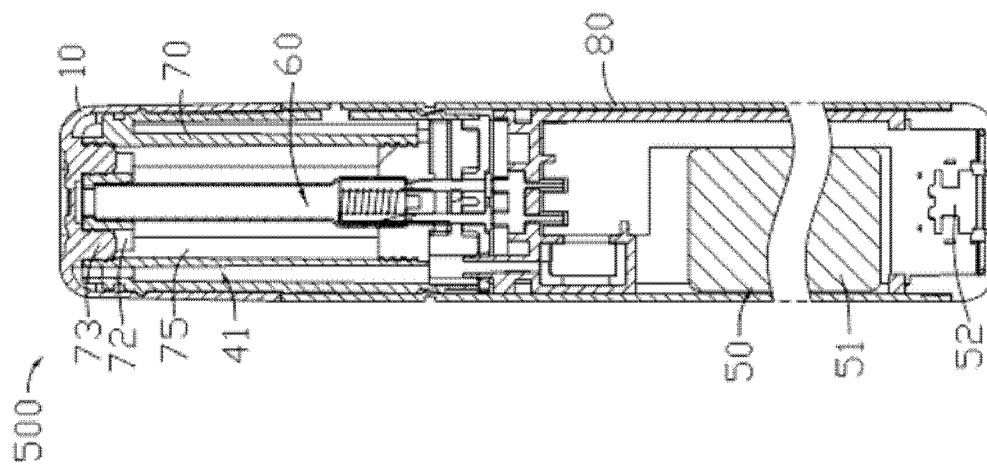


FIG. 12

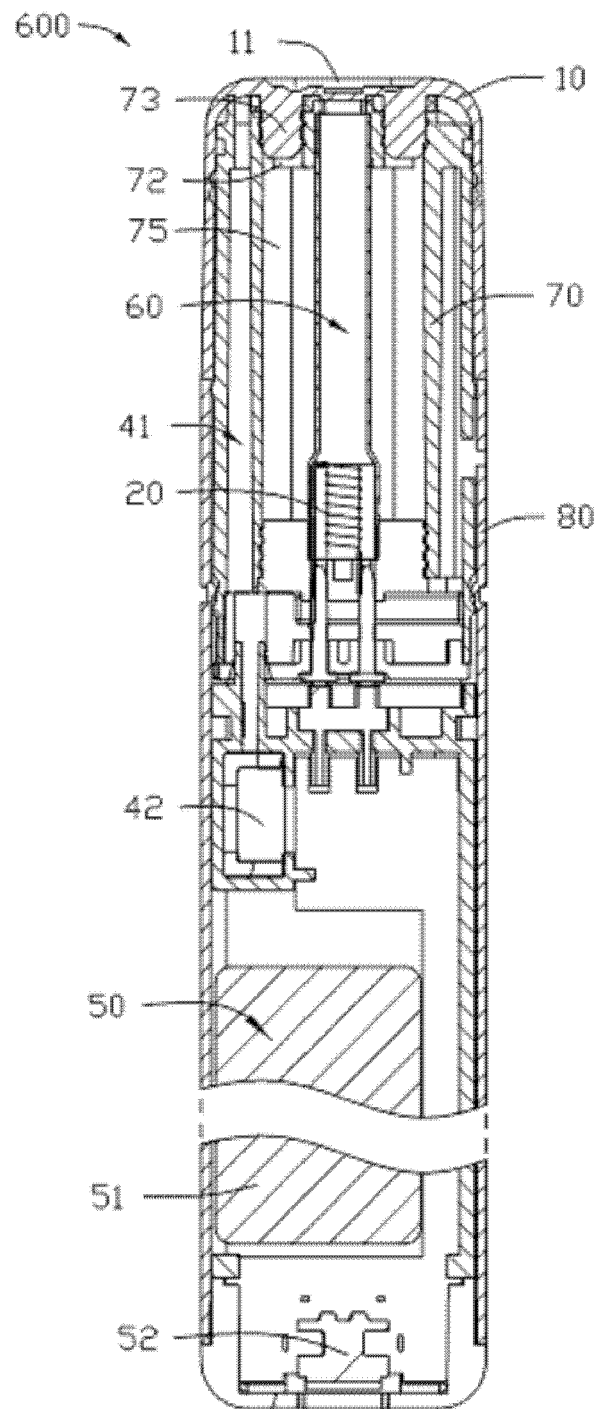


FIG. 13

**PARTIAL EUROPEAN SEARCH REPORT**

Application Number

under Rule 62a and/or 63 of the European Patent Convention.
This report shall be considered, for the purposes of
subsequent proceedings, as the European search report

EP 18 18 7750

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2018/042299 A1 (HAN YI [CN] ET AL) 15 February 2018 (2018-02-15) * paragraph [0039] - paragraph [0054]; figures 1,2,4 *	1-13	INV. A24F47/00
A	US 2017/079330 A1 (MIRONOV OLEG [CH] ET AL) 23 March 2017 (2017-03-23) * paragraph [0065]; figure 1 *	1-13	
A	US 2018/077970 A1 (WORM STEVEN L [US] ET AL) 22 March 2018 (2018-03-22) * paragraph [0053] - paragraph [0074]; figures 1-6B *	1-13	
			TECHNICAL FIELDS SEARCHED (IPC)
			A24F

INCOMPLETE SEARCH

The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC so that only a partial search (R.62a, 63) has been carried out.

Claims searched completely :

Claims searched incompletely :

Claims not searched :

Reason for the limitation of the search:

see sheet C

1

EPO FORM 1503 03.82 (P04E07)

Place of search	Date of completion of the search	Examiner
Munich	10 July 2019	Schwertfeger, C
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document		

**INCOMPLETE SEARCH
SHEET C**

Application Number

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5

10

15

20

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Claim(s) completely searchable:
1-13

Claim(s) not searched:
14, 15

Reason for the limitation of the search:

In reply to the invitation of March 13th 2019 to indicate the claims on which the search is to be based, the applicant failed to supply the requested indication in due time. Thus, the search report has been drawn up on the basis of the first independent claim of each category (Rule 62a (1) EPC), i.e. claim 1 (atomizer) and its dependent claims 2-13. The applicant's attention is drawn to the fact that the application will be further prosecuted on the basis of subject-matter for which a search has been carried out and that the claims should be limited to that subject-matter at a later stage of the proceedings (Rule 62a (2) EPC).

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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