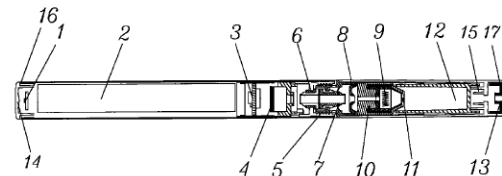


[12] Specification of Utility
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pages of Attached Drawings[54] **Title Utility Model**Environmental-protecting Type
Incombustible Atomizing Electronic Cigarette
with Function of Cigarette Substitute[57] **Abstract**

Provided is an environmental-protecting type incombustible atomizing electronic cigarette with a function of a cigarette substitute, which relates to a cigarette substitute, and comprises a detachable controller and a generator, the inner part of the controller is provided with an indicating lamp cover, a signal indicating lamp, a chargeable lithium battery, an integrated circuit board, an electret microphone and a hollow connecting conductor B in sequence; the inner part of the generator is provided with a hollow connecting conductor A, a vibrating diaphragm, a liquid-blocking plate, a secondary liquid storage chamber, a heater, a liquid-guiding mechanism, a liquid storage chamber and a soft suction nozzle in sequence; the connecting conductor A is provided



with an air inlet; a gap which is used as an airflow channel is left between the soft suction nozzle and the liquid storage chamber; and a space which is needed by the electret microphone is left between the electret microphone and the connector conductor B. The utility model has similar shape with the cigarette, is small, easy to carry, simple in structure and low in cost, meets the using habits of smokers, does not have noxious substances of tar and carbon monoxide, and the like, reduces the cancerogenic risk, and does not have fire hazard; in addition, the aspirated smoke does not cause environmental pollution.

1. An Environmental-protecting type incombustible atomizing electronic cigarette with a function of a cigarette substitute, comprising a detachable controller and a generator, characterized in that an indicating lamp cover (14), a signal indicating lamp (1), a rechargeable lithium battery (2), an integrated circuit board (3), an electret microphone (4) and a hollow connecting conductor B (6) are sequentially arranged inside the controller from left to right; a hollow connecting conductor A (5), a vibrating diaphragm (7), a liquid-blocking plate (8), a secondary liquid storage chamber (10), a heater (9), a liquid-guiding mechanism (11), a liquid storage chamber (12) and a soft suction nozzle (13) are sequentially arranged inside the generator from left to right; and the connecting conductor A (5) is provided with an air inlet (702), a gap which is used as an airflow channel is left between the soft suction nozzle (13) and the liquid storage chamber (12), and a space which is needed by the electret microphone is left between the electret microphone (4) and the connecting conductor B (6).

2. The environmental-protecting type incombustible atomizing electronic cigarette with the function of the cigarette substitute according to Claim 1, characterized in that the connecting conductor B (6) and the connecting conductor A (5) are provided with threads or clamping grooves matched with each other.

3. The environmental-protecting type incombustible atomizing electronic cigarette with the function of the cigarette substitute according to Claim 2, characterized in that the connecting conductor B (6) and the connecting conductor A (5) are in threaded connection or clamping groove connection through hollow contact copper caps.

4. The environmental-protecting type incombustible atomizing electronic cigarette with the function of the cigarette substitute according to Claim 1 or 2 or 3, characterized in that stainless steel shells are arranged on an outer surface of the controller and an outer surface of the generator, respectively, a liquid blocking tank (15) is arranged inside the soft suction nozzle (13), a liquid blocking sealing cover (17) is arranged on an outer end face of the soft suction nozzle (13), and a vent hole (16) is arranged at a bottom end of the controller or on the indicating lamp cover (14).

5. The environmental-protecting type incombustible atomizing electronic cigarette with the function of the cigarette substitute according to Claim 4, characterized in that a heat insulation layer is further arranged in the stainless steel shell of the generator.

6. The environmental-protecting type incombustible atomizing electronic cigarette with the function of the cigarette substitute according to Claim 1 or 2 or 3, characterized in that the integrated circuit board (3) comprises a controller IC1, a first pin of the controller IC1 is connected with one end of a capacitor C1, one end of a resistor R7, one end of a resistor R1 and a collector of a triode Q1, respectively, the other end of the resistor R7 is connected with a VCC terminal, an emitter of the triode Q1 is connected with one end of a resistor R5 and a fourth pin of the controller IC1, respectively, the other end of the resistor R1 is connected with a base of the triode Q1 and one end of

a resistor R2, respectively, the other end of the resistor R2 is connected with a K terminal and one end of a resistor R4, respectively, the other end of the resistor R4 is connected with the other end of the resistor R5, a GND terminal and a HEATER- terminal, a second pin of the controller IC1 is connected with one end of a resistor R3, the other end of the resistor R3 is connected with the K terminal, a third pin of the controller IC1 is connected with a HEATER+ terminal and one end of a resistor R6, respectively, the other end of the resistor R6 is connected with the GND terminal, a fifth pin of the controller IC1 is connected with a positive electrode of an LED lamp D1 through an LE terminal, a negative electrode of the LED lamp D1 is connected with one end of a resistor R8, the other end of the resistor R8 is connected with the GND terminal, a sixth pin of the controller IC1 is connected with a gate of an MOS FET Q2, a source of the MOS FET Q2 is connected with the HEATER+ terminal, a drain of the MOS FET Q2 is connected with a power supply VCC, a seventh pin of an IC chip is connected with an S terminal, an eighth pin of the controller IC1 is connected with the other end of the capacitor C1 and the GND terminal, respectively, the HEATER- terminal is connected with a negative electrode of the heater HEATER, the HEATER+ terminal is connected with a positive electrode of the heater HEATER, and a switch S1 is connected between the K terminal and the S terminal.

7. The environmental-protecting type incombustible atomizing electronic cigarette with the function of the cigarette substitute according to Claim 4, characterized in that the integrated circuit board (3) comprises a controller IC1, a first pin of the controller IC1 is connected with one end of a capacitor C1, one end of a resistor R7, one end of a resistor R1 and a collector of a triode Q1, respectively, the other end of the resistor R7 is connected with a VCC terminal, an emitter of the triode Q1 is connected with one end of a resistor R5 and a fourth pin of the controller IC1, respectively, the other end of the resistor R1 is connected with a base of the triode Q1 and one end of a resistor R2, respectively, the other end of the resistor R2 is connected with a K terminal and one end of a resistor R4, respectively, the other end of the resistor R4 is connected with the other end of the resistor R5, a GND terminal and a HEATER- terminal, a second pin of the controller IC1 is connected with one end of a resistor R3, the other end of the resistor R3 is connected with the K terminal, a third pin of the controller IC1 is connected with a HEATER+ terminal and one end of a resistor R6, respectively, the other end of the resistor R6 is connected with the GND terminal, a fifth pin of the controller IC1 is connected with a positive electrode of an LED lamp D1 through an LE terminal, a negative electrode of the LED lamp D1 is connected with one end of a resistor R8, the other end of the resistor R8 is connected with the GND terminal, a sixth pin of the controller IC1 is connected with a gate of an MOS FET Q2, a source of the MOS FET Q2 is connected with the HEATER+ terminal, a drain of the MOS FET Q2 is connected with a power supply VCC, a seventh pin of an IC chip is connected with an S terminal, an eighth pin of the controller IC1 is connected with the other end of the capacitor C1 and the GND terminal, respectively, the HEATER- terminal is connected with a negative

electrode of the heater HEATER, the HEATER+ terminal is connected with a positive electrode of the heater HEATER, and a switch S1 is connected between the K terminal and the S terminal.

8. The environmental-protecting type incombustible atomizing electronic cigarette with the function of the cigarette substitute according to Claim 5, characterized in that the integrated circuit board (3) comprises a controller IC1, a first pin of the controller IC1 is connected with one end of a capacitor C1, one end of a resistor R7, one end of a resistor R1 and a collector of a triode Q1, respectively, the other end of the resistor R7 is connected with a VCC terminal, an emitter of the triode Q1 is connected with one end of a resistor R5 and a fourth pin of the controller IC1, respectively, the other end of the resistor R1 is connected with a base of the triode Q1 and one end of a resistor R2, respectively, the other end of the resistor R2 is connected with a K terminal and one end of a resistor R4, respectively, the other end of the resistor R4 is connected with the other end of the resistor R5, a GND terminal and a HEATER- terminal, a second pin of the controller IC1 is connected with one end of a resistor R3, the other end of the resistor R3 is connected with the K terminal, a third pin of the controller IC1 is connected with a HEATER+ terminal and one end of a resistor R6, respectively, the other end of the resistor R6 is connected with the GND terminal, a fifth pin of the controller IC1 is connected with a positive electrode of an LED lamp D1 through an LE terminal, a negative electrode of the LED lamp D1 is connected with one end of a resistor R8, the other end of the resistor R8 is connected with the GND terminal, a sixth pin of the controller IC1 is connected with a gate of an MOS FET Q2, a source of the MOS FET Q2 is connected with the HEATER+ terminal, a drain of the MOS FET Q2 is connected with a power supply VCC, a seventh pin of an IC chip is connected with an S terminal, an eighth pin of the controller IC1 is connected with the other end of the capacitor C1 and the GND terminal, respectively, the HEATER- terminal is connected with a negative electrode of the heater HEATER, the HEATER+ terminal is connected with a positive electrode of the heater HEATER, and a switch S1 is connected between the K terminal and the S terminal.

Environmental-protecting Type Incombustible Atomizing Electronic Cigarette with Function of Cigarette Substitute

Technical Field

The utility model relates to a cigarette substitute, in particular to an environmental-protecting type incombustible atomizing electronic cigarette with a function of a cigarette substitute.

Background Art

Today, "smoking is harmful to health" has become common knowledge. There are still more than 1 billion smokers in the world. The U.S. Environmental Protection Agency currently declares tobacco smoke in air as a Class A carcinogen. According to figures released by the World Health Organization and other departments, about 4.9 million people die from smoking-related diseases in the world every year; but due to various reasons, it is extremely difficult for smokers to quit smoking completely. Nicotine in tobacco is a chemical substance that makes smoking addictive and difficult to quit. Relevant experts of the American Medical Association pointed out that nicotine is one of the most powerful addictive substances. Research institutions have further clarified how nicotine works through the human brains to make smokers addicted. When smoking, nicotine is rapidly absorbed after entering alveoli along with a large amount of tar droplets produced when a cigarette burns, causing stimulant-like "intoxication", such as the feeling of dizziness or lightheadedness experienced by smokers. Nicotine is small molecule alkaloid, which is basically harmless to human bodies under small doses, and has a very short half-life in blood. However, tobacco also contains other harmful substances, such as tobacco tar, carbon monoxide, benzopyrene, polycyclic aromatic hydrocarbons, nitrosamines and azo impurities, which are all strong carcinogens, causing huge harm to human survival and health.

In order to achieve the purposes of meeting the needs of smokers for smoking addiction, while minimizing the harm of tobacco and not changing people's habits, in many smoking cessation products, low-dose nicotine is made into products such as "smoking cessation stickers", "nicotine mouthwash" and "nicotine gum", although these products have solved the problem of smokers' addiction to a certain extent, because these products are incompatible with the use habits of smokers, it is difficult for the smokers to accept them. There are also some smoking cessation products that heat a nicotine solution through a mechanical device for smokers to use. Although smokers easily accept it in terms of use habits, due to the fact that traditional mechanical structures are unstable in performance, extremely prone to damage and cumbersome to operate, losses to the smokers are easily caused. In order not to change the habits of the smokers as much as possible, some people also tried to add activated carbon filters, liquid filtration and other filtration devices on the basis of cigarettes, so

as to expect to reduce the harm of cigarettes to the human bodies to a certain extent; and some people also tried to make large machinery and equipment into equipment similar to oxygen machines, although this meets the needs of smokers to a certain extent, the equipment is huge and high in manufacturing cost, many of them require special venues, which is difficult for the smokers to accept, and the smoking cessation effects are not ideal.

Summary of the Utility Model

For defects existing in the prior art, the objective of the utility model is to provide an environmental-protecting type incombustible atomizing electronic cigarette with a function of a cigarette substitute, which has similar shape with the cigarette, is small, easy to carry, simple in structure and low in cost, meets the using habits of smokers, does not have noxious substances of tar and carbon monoxide, and the like, reduces the cancerogenic risk, and does not have fire hazard; in addition, the aspirated smoke does not cause environmental pollution..

For achieving the above objective, the technical solution that the utility model takes is:

An environmental-protecting type incombustible atomizing electronic cigarette with a function of a cigarette substitute, comprising a detachable controller and a generator, characterized in that an indicating lamp cover 14, a signal indicating lamp 1, a rechargeable lithium battery 2, an integrated circuit board 3, an electret microphone 4 and a hollow connecting conductor B6 are sequentially arranged inside the controller from left to right; a hollow connecting conductor A5, a vibrating diaphragm 7, a liquid-blocking plate 8, a secondary liquid storage chamber 10, a heater 9, a liquid-guiding mechanism 11, a liquid storage chamber 12 and a soft suction nozzle 13 are sequentially arranged inside the generator from left to right; and the connecting conductor A5 is provided with air inlets 702, a gap which is used as an airflow channel is left between the soft suction nozzle 13 and the liquid storage chamber 12, and a space which is needed by the electret microphone is left between the electret microphone 4 and the connecting conductor B6.

On the basis of the above technical solution, the connecting conductor B6 and the connecting conductor A5 are provided with threads or clamping grooves matched with each other.

On the basis of the above technical solution, the connecting conductor B6 and the connecting conductor A5 are in threaded connection or clamping groove connection through hollow contact copper caps.

On the basis of the above technical solution, stainless steel shells are arranged on an outer surface of the controller and an outer surface of the generator, respectively, a liquid blocking tank 15 is arranged inside the soft suction nozzle 13, a liquid blocking sealing cover 17 is arranged on an outer

end face of the soft suction nozzle 13, and a vent hole 16 is arranged at a bottom end of the controller or on the indicating lamp cover 14.

On the basis of the above technical solution, a heat insulation layer is further arranged in the stainless steel shell of the generator.

On the basis of the above technical solution, the integrated circuit board 3 comprises a controller IC1, a first pin of the controller IC1 is connected with one end of a capacitor C1, one end of a resistor R7, one end of a resistor R1 and a collector of a triode Q1, respectively, the other end of the resistor R7 is connected with a VCC terminal, an emitter of the triode Q1 is connected with one end of a resistor R5 and a fourth pin of the controller IC1, respectively, the other end of the resistor R1 is connected with a base of the triode Q1 and one end of a resistor R2, respectively, the other end of the resistor R2 is connected with a K terminal and one end of a resistor R4, respectively, the other end of the resistor R4 is connected with the other end of the resistor R5, a GND terminal and a HEATER-terminal, a second pin of the controller IC1 is connected with one end of a resistor R3, the other end of the resistor R3 is connected with the K terminal, a third pin of the controller IC1 is connected with a HEATER+ terminal and one end of a resistor R6, respectively, the other end of the resistor R6 is connected with the GND terminal, a fifth pin of the controller IC1 is connected with a positive electrode of an LED lamp D1 through an LE terminal, a negative electrode of the LED lamp D1 is connected with one end of a resistor R8, the other end of the resistor R8 is connected with the GND terminal, a sixth pin of the controller IC1 is connected with a gate of an MOS FET Q2, a source of the MOS FET Q2 is connected with the HEATER+ terminal, a drain of the MOS FET Q2 is connected with a power supply VCC, a seventh pin of an IC chip is connected with an S terminal, an eighth pin of the controller IC1 is connected with the other end of the capacitor C1 and the GND terminal, respectively, the HEATER- terminal is connected with a negative electrode of the heater HEATER, the HEATER+ terminal is connected with a positive electrode of the heater HEATER, and a switch S1 is connected between the K terminal and the S terminal.

The environmental-protecting type incombustible atomizing electronic cigarette with the function of the cigarette substitute of the utility model has similar shape with the cigarette, is small, easy to carry, simple in structure and low in cost, meets the using habits of smokers, does not have noxious substances of tar and carbon monoxide, and the like, reduces the cancerogenic risk, and does not have fire hazard; in addition, the aspirated smoke does not cause environmental pollution.

Brief Description of the Drawings

The utility model has the following drawings:

Fig. 1 is a schematic structural diagram of an environmental-protecting type incombustible atomizing electronic cigarette with a function of a cigarette substitute

Fig. 2 is a detachment schematic structural diagram of the environmental-protecting type incombustible atomizing electronic cigarette with the function of the cigarette substitute

Fig. 3 is a schematic structural diagram of a connecting conductor A, a connecting conductor B and a vibrating diaphragm

Fig. 4 is a schematic structural diagram of a liquid-blocking plate, a secondary liquid storage chamber, a heater and a liquid-guiding mechanism

Fig. 5 is a schematic structural diagram of an airflow circulation of a suction nozzle part and a soft suction nozzle

Fig. 6 is a schematic diagram of a circuit principle of an integrated circuit board

Reference numerals:

1 signal indicating lamp, 2 rechargeable lithium battery, 3 integrated circuit board, 4 electret microphone, 5 connecting conductor A, 6 connecting conductor B, 7 vibrating diaphragm, 8 liquid-blocking plate, 9 heater, 10 secondary liquid storage chamber, 11 liquid-guiding mechanism, 12 liquid storage chamber, 13 soft suction nozzle, 14 indicating lamp cover, 15 liquid blocking tank, 16 vent hole, 17 liquid blocking sealing cover

Detailed Description of Embodiments

The utility model will be further described in detail below in conjunction with the accompanying drawings.

Fig. 1 is a schematic structural diagram of an environmental-protecting type incombustible atomizing electronic cigarette with a function of a cigarette substitute, and Fig. 2 is a detachment schematic structural diagram of the environmental-protecting type incombustible atomizing electronic cigarette with the function of the cigarette substitute. The environmental-protecting type incombustible atomizing electronic cigarette comprises a detachable controller and a generator, and is characterized in that an indicating lamp cover 14, a signal indicating lamp 1, a rechargeable lithium battery 2, an integrated circuit board 3, an electret microphone 4 and a hollow connecting conductor B6 are sequentially arranged inside the controller from left to right; a hollow connecting conductor A5, a vibrating diaphragm 7, a liquid-blocking plate 8, a secondary liquid storage chamber 10, a heater 9, a liquid-guiding mechanism 11, a liquid storage chamber 12 and a soft suction nozzle 13 are

sequentially arranged inside the generator from left to right; and the connecting conductor A5 is provided with air inlets 702 (see Fig. 3), a gap which is used as an airflow channel is left between the soft suction nozzle 13 and the liquid storage chamber 12 (see Fig. 5), and a space which is needed by the electret microphone is left between the electret microphone 4 and the connecting conductor B6. As shown in Fig. 1, the electret microphone 4 divides the controller into two independent spaces. Inside the left space is the indicating lamp cover 14, the signal indicating lamp 1 and the rechargeable lithium battery 2, and inside the right space is the electret microphone 4 and the connecting conductor B6. The specific implementation of said "the electret microphone 4 divides the controller into two independent spaces" may be implemented using the prior art, and soft plastic is preferably used around the electret microphone 4 to seal a gap between the electret microphone and a shell of the controller. As shown in Fig. 1 and Fig. 2, the rechargeable lithium battery 2 is arranged inside. After the detachable controller and generator are detached, if the connecting conductor B6 of the controller is connected to a charger, charging of the rechargeable lithium battery 2 can be achieved through the integrated circuit board 3, and if the connecting conductor B6 is connected with the generator through the connecting conductor A5, the environmental-protecting type incombustible atomizing electronic cigarette with the function of the cigarette substitute can be formed. The signal indicating lamp 1 may simulate a lighting and extinguishing effect of a cigarette end every time a smoker smokes. The signal indicating lamp 1 is powered by the rechargeable lithium battery 2 through the integrated circuit board 3. The heater 9 is powered by the rechargeable lithium battery 2 through the connecting conductor A5, the connecting conductor B6, and the integrated circuit board 3. The working process of the utility model is as follows: when in use, chemical liquid flows from the liquid storage chamber 12 into the secondary liquid storage chamber 10 through the liquid-guiding mechanism 11, the heater 9 is wrapped with the liquid-guiding mechanism 11 (see Fig. 4), under the action of suction by the smoker, airflow enters the inside of the generator from the air inlets 702 on a side surface of the generator, under the action of the airflow, the vibrating diaphragm 7 vibrates, the electret microphone 4 also vibrates accordingly, after vibration is converted into a switching signal through a controller IC1 (see Fig. 6) on the integrated circuit board, the heater 9 starts working, the chemical liquid is instantly vaporized in an atomizing working room of the heater 9, and the vaporized chemical liquid is sucked out by the smoker from the soft suction nozzle 13.

On the basis of the above technical solution, the connecting conductor B6 and the connecting conductor A5 are provided with threads or clamping grooves matched with each other. The controller and the generator are connected through the connecting conductor B6 and the connecting conductor A5. In addition to threaded connection and clamping groove clamping-connection, a specific connection method may also be implemented using the prior art. On the basis of the above technical

solution, the connecting conductor B6 and the connecting conductor A5 are in threaded connection or clamping groove connection through hollow contact copper caps. A cigarette-like whole can be formed after the controller and the generator are connected through the connecting conductor B6 and the connecting conductor A5.

On the basis of the above technical solution, in order to be safe, beautiful and convenient to use, stainless steel shells are arranged on an outer surface of the controller and an outer surface of the generator, respectively, a liquid blocking tank 15 is arranged inside the soft suction nozzle 13, a liquid blocking sealing cover 17 is arranged on an outer end face of the soft suction nozzle 13, and a vent hole 16 is arranged at a left end of the controller or the indicating lamp cover 14. The liquid blocking tank 15 and the liquid blocking sealing cover 17 are used to prevent the chemical liquid from being sucked into the mouth. The use of the vent hole 16 is to ensure good heat dissipation of the left space of the controller (i.e., the left space obtained after the electret microphone 4 divides the controller).

On the basis of the above technical solution, a heat insulation layer is further arranged in the stainless steel shell of the generator. The purpose of the heat insulation layer is to avoid potential safety hazards caused by a high temperature of the heater 9.

Based on the above technical solution, the integrated circuit board 3 comprises a control circuit of an entire system, its electronic delay function and electronic cleaning reset function are realized by software programs, and the integrated circuit board further comprises a heater driving circuit and the controller IC1. The integrated circuit board 3 receives a signal from the electret microphone, sends the signal to the controller IC1 for analysis and processing, and then turns the signal into a control signal for controlling the heater, and at the same time, the controller IC1 further sends a lighting/extinguishing control signal to the signal indicating lamp. The entire circuit is simple and practical, and may be implemented using the prior art according to functional requirements.

The modern single-chip microcomputer technology, biology, microelectronics and a series of biological and physical phenomena provide a technical basis for the utility model. The utility model has the advantages that harmful substances such as tar and carbon monoxide do not exist during smoking, which greatly reduces the carcinogenic risk, the smoker still has the feeling of smoking, ignition is not required, and no fire risk exists. The smoke generated by smoking is actually water vapor obtained by vaporizing the chemical liquid, so there is no environmental pollution. A low-voltage weak level of 3.7–4.2 volt is adopted to supply power, energy consumption is low, and in the working process, there is no combustion product, soot, open flame or potential fire hazard, making it easy for the public to accept.

The technical solution of the utility model is further explained below through specific

embodiments of Figs. 3–6:

Fig. 3 is the schematic structural diagram of the connecting conductor A5, the connecting conductor B6 and the vibrating diaphragm 7. As shown in the figure, the air inlets 702 are arranged on the side surface of the connecting conductor A5, and the air inlets 702 make a hollow part of the connecting conductor A5 and the outside of the generator communicated; the vibrating diaphragm 7 that can cover the air inlets 702 and may also be used to strengthen and prolong the vibration of the airflow is arranged on the right side of the connecting conductor A5; when the smoker sucks, the airflow enters from the air inlets 702 to drive the vibrating diaphragm 7 to vibrate, and then forms vibration in a hollow part 606 of the connecting conductor B, thereby triggering the electret microphone to send out a low-frequency signal; the controller IC1 on the integrated circuit board performs sampling and analysis on the low-frequency signal, and controls the heater 9 to start working so as to match the suction by the smoker; and when the smoker's suction force decreases, the vibrating diaphragm 7 stops vibrating, an airflow path between the air inlets 702 and the generator is cut off by the vibrating diaphragm 7, the electret microphone stops working, and the controller IC1 cannot receive the low-frequency signal, thereby controlling the heater 9 to stop working. The heater 9 is switched on and off under the action of small airflow, that is, control over real-time heating of the heater is implemented. The vibrating diaphragm 7 may be made of rubber or silica gel. As shown in Fig. 3, the connecting conductor A5 and the connecting conductor B6 form a connecting outer ring through an inner thread 602 and an outer thread 604, respectively, a negative electrode of a lead-in wire for connecting the heater reaches the rechargeable lithium battery 2 via the integrated circuit board 3, and a positive electrode of the lead-in wire connected with the heater through two hollow columnar conductors 601, 603 reaches the rechargeable lithium battery 2 via the integrated circuit board 3; and an insulating material ring 605 separate the positive and negative electrodes 601, 603 and 602, 604. In its example, the insulating material ring 605 may be made of silica gel or rubber, and may also be made of other insulating materials. When the connecting conductor B6 and the connecting conductor A5 are in threaded connection or clamping groove connection through the hollow contact copper caps, attention must also be paid to the problem of insulation between the positive and negative electrodes, which may be implemented using the prior art.

Fig. 4 is the schematic structural diagram of the liquid-blocking plate 8, the secondary liquid storage chamber 10, the heater 9 and the liquid-guiding mechanism 11. As shown in the figure, the heater 9 comprises the atomizing working room provided with a heating wire 901 and a heat insulation seat 902 outside the heater, a spray hole 904 and an overflow holes 903 are formed in a bottom and a side surface of the heat insulation seat 902, respectively, the heating wire 901 may be made of a platinum wire, a nickel-chromium alloy or an iron-chromium-aluminum alloy wire

containing rare earth elements, and may also be made into a sheet or ring, and the heat insulation seat 902 may be made of ceramics or the like. The liquid-guiding mechanism 11 is arranged on the right side of the heater. The liquid-guiding mechanism 11 is composed of a support frame 1101 and a liquid guiding body 1102. The support frame 1101 of the liquid-guiding mechanism plays a role in fixing. The liquid guiding body 1102 is made of a multi-layer foam nickel mesh or other metal porous bodies. The liquid guiding body 1102 may also be made of stainless steel fiber felt, polymer foam and ceramic foam. The secondary liquid storage chamber 10 is arranged on the left side of the heater. The secondary liquid storage chamber 10 is formed by filling the bottom and periphery of the heat insulation seat 902 with the multi-layer foam nickel mesh. One end of the liquid-guiding mechanism 11 is connected with the secondary liquid storage chamber 10 through the liquid guiding body 1102, and the other end is in contact with the liquid storage chamber 12. The secondary liquid storage chamber 10 may temporarily store the chemical liquid. The liquid-blocking plate 8 may prevent the chemical liquid in the secondary liquid storage chamber 10 from flowing out, so as to prevent the chemical liquid from flowing into the controller and affecting the circuit. Its working process is as follows: under the action of airflow, small droplets are sucked into the other side of the heat insulation seat 902 through the spray hole 904 in the heat insulation seat 902. Under the action of the heating wire 901, the liquid is instantly atomized, then flows out of the heater 9 from the overflow holes 903, then flows to the position of the soft suction nozzle 13 through the gap between the soft suction nozzle and the liquid storage chamber 12 as the airflow channel, and is finally sucked out through the soft suction nozzle 13.

Fig. 5 is the schematic structural diagram of the airflow circulation of the suction nozzle part and the soft suction nozzle 13. As shown in the figure:, the soft suction nozzle 13 is arranged on a right end face of the generator, its soft silica gel has a good mouth feeling and may be chewed lightly, and the liquid blocking tank 15 made of soft silica gel to prevent the liquid from being sucked into the mouth is further arranged on the inner side of the soft suction nozzle 13. A left end 1301 of the soft suction nozzle 13 extends to the bottom of the liquid stopping sheet 8, and may be made of environmental-friendly materials such as polypropylene PP, which may effectively prevent internal heat from being transmitted out. The soft suction nozzle 13 is further provided with the liquid blocking sealing cover 17 made of soft silica gel to prevent the liquid from being sucked into the mouth. The liquid blocking tank 15 is in contact with one end of the liquid storage chamber 12. The liquid storage chamber 12 is a cylindrical object with one end open, medicinal cotton fibers are placed in the middle, and then the raw chemical liquid is charged in. Through a capillary action of the liquid-guiding mechanism 11, the chemical liquid stored in the liquid storage chamber 12 is guided into the secondary liquid storage chamber 10. As shown in the figure: the atomized chemical liquid

flowing out from the overflow holes 903 flows through the gap between the soft suction nozzle and the liquid storage chamber 12 as the airflow channel to the liquid blocking tank 15, then flows to the liquid blocking sealing cover 17, and is finally sucked into the smoker's mouth.

The integrated circuit board 3 comprises the control circuit of the entire system, its electronic delay function and electronic cleaning reset function are realized by software programs, and the integrated circuit board further comprises the heater driving circuit and the controller IC1. Fig. 6 is the schematic diagram of the circuit principle of the integrated circuit board 3. As shown in the figure, the integrated circuit board uses the controller IC1 for controlling. IC1 is a core intelligent control unit, which is mainly responsible for receiving and distinguishing input signals, and at the same time controlling the signal indicating lamp and the heater. The whole device is powered by a 3.7 V lithium-ion battery, VCC represents connection to a positive electrode of the battery, and GND represents connection to a negative electrode of the battery. In the figure, two terminals S, K are connected to positive and negative electrodes of the electret microphone. A control signal provided by the electret microphone may be regarded as an on-off signal provided by a switch S1. The controller IC1 detects a battery voltage every ten seconds (that is, detects it once every ten seconds). It first determines whether the power supply voltage is higher than 3.3 V at the moment. If so, after analyzing signals sent by the electret microphone, a signal that conforms to the rules is converted into a switching signal, a control signal is output to the heater driving circuit, a triode amplifies the signal output by the controller IC1, the heating wire is connected to the power supply to generate heat, the heater works to instantly heat liquid nicotine liquid, at the same time, a display signal is output to make an LED emit red or orange light to simulate a fire head of a cigarette, and a delay signal may also be output to make an LED lamp gradually brighten or fade out. The simulation of a cigarette end is made more vivid. If the battery voltage is lower than 3.3 V, the electret microphone is turned off. At the moment, a heating chamber does not produce any action. When the whole machine has no action, the controller IC1 enters a sleep state, and the power consumption of the whole machine is less than 15 uA, so that the standby time of the whole machine may be extended to be longer than two and a half years of the theoretical standby time. When a user uses this device continuously for fifteen times within one minute, the controller IC1 will send a signal to cut off the output of a heating circuit, and at the same time output a signal to an LED indicating lamp to flash continuously for 10 seconds. When S1 is continuously switched on for more than 6 seconds, the heating circuit is automatically cut off, and a signal is output to the LED, etc. at the same time. Other programs may also be written into the controller IC1 to realize more functions and provide convenience for subsequent updating and improvement. An LCD display screen may also be connected to a signal output end to display more information. The utility model uses the controller IC1 to control its working process to ensure that the

electronic cigarette works reliably and the smoking method is more vivid. The controller IC1 may be implemented using the prior art. For example: an existing single-chip microcomputer is selected as the controller IC1, and as long as the above basic functions can be realized, the specific selection of the single-chip microcomputer is not limited. The "smoke" sucked out through the utility model is actually the "water vapor" obtained after vaporizing the chemical liquid, and does not contain smoke tar, carbon monoxide, benzopyrene, polycyclic aromatic hydrocarbons, nitrosamines, azo impurities, etc., which are all strong carcinogens. The "water vapor" will quickly liquefy in the air and will not pollute the environment. Its heating part performs instant heating under a low voltage and a low current, without combustion and without potential fire hazards. Its shell is made of special stainless steel, which may effectively shield electromagnetic waves. More specifically speaking: a first pin of the controller IC1 is connected with one end of a capacitor C1, one end of a resistor R7, one end of a resistor R1 and a collector of a triode Q1, respectively, the other end of the resistor R7 is connected with a VCC terminal, an emitter of the triode Q1 is connected with one end of a resistor R5 and a fourth pin of the controller IC1, respectively, the other end of the resistor R1 is connected with a base of the triode Q1 and one end of a resistor R2, respectively, the other end of the resistor R2 is connected with a K terminal and one end of a resistor R4, respectively, the other end of the resistor R4 is connected with the other end of the resistor R5, a GND terminal and a HEATER- terminal, a second pin of the controller IC1 is connected with one end of a resistor R3, the other end of the resistor R3 is connected with the K terminal, a third pin of the controller IC1 is connected with a HEATER+ terminal and one end of a resistor R6, respectively, the other end of the resistor R6 is connected with the GND terminal, a fifth pin of the controller IC1 is connected with a positive electrode of an LED lamp D1 through an LE terminal, a negative electrode of the LED lamp D1 is connected with one end of a resistor R8, the other end of the resistor R8 is connected with the GND terminal, a sixth pin of the controller IC1 is connected with a gate of an MOS FET Q2, a source of the MOS FET Q2 is connected with the HEATER+ terminal, a drain of the MOS FET Q2 is connected with a power supply VCC, a seventh pin of an IC chip is connected with an S terminal, an eighth pin of the controller IC1 is connected with the other end of the capacitor C1 and the GND terminal, respectively, the HEATER- terminal is connected with a negative electrode of the heater HEATER, the HEATER+ terminal is connected with a positive electrode of the heater HEATER, and a switch S1 is connected between the K terminal and the S terminal.

The controller IC1 may be selected from the world's smallest 8-bit single-chip microcontroller PIC12C5xx series produced by the Microchip Corporation.

The working process of this example is as follows: after the controller and the generator are connected through the connecting conductors A, B, the environmental-protecting type incombustible

atomizing electronic cigarette is formed; when the smoker sucks, the airflow enters the generator through the air inlet on a side of the connecting conductor A, passes through the vibrating diaphragm, the liquid-blocking plate and the heater, and is finally sucked out through the suction nozzle; while a through hole is formed in the connecting conductors of the controller and the generator, when the smoker sucks, the airflow inside the controller flows to the generator to activate the control circuit, the vent hole is further formed at the side of the indicating lamp cover on the other side of the controller to make a part of a cavity of the battery communicate with the atmospheric pressure, in this way, under the action of air vibration on one side of a control assembly, the electret microphone sends a low-frequency signal, IC1 analyzes vibration properties and sends a switching signal to conduct a current, at the moment, the indicating lamp slowly brightens under the control of IC1, and at the same time, the current passes through the connecting conductors to make the heater work; and in a heating room, due to the action of the airflow, the chemical liquid is sprayed into the atomizing room in the form of droplets, the chemical liquid is instantly atomized by the action of the heater, large-diameter droplets after atomization are attached to a wall under the action of a vortex to be reabsorbed by the liquid-guiding mechanism through the overflow holes, and small-diameter droplets are suspended in the airflow to form water vapor, which is sucked out through a smoke channel and the suction nozzle.

The above descriptions are only preferred examples of the utility model, and are not intended to limit the scope of protection of the utility model. Any changes that can be easily imagined by those skilled in the art within the technical scope disclosed by the utility model should be included in the scope of protection of the utility model.

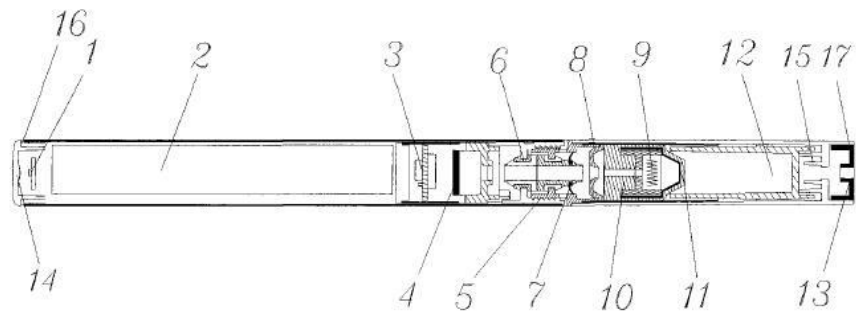


Fig. 1

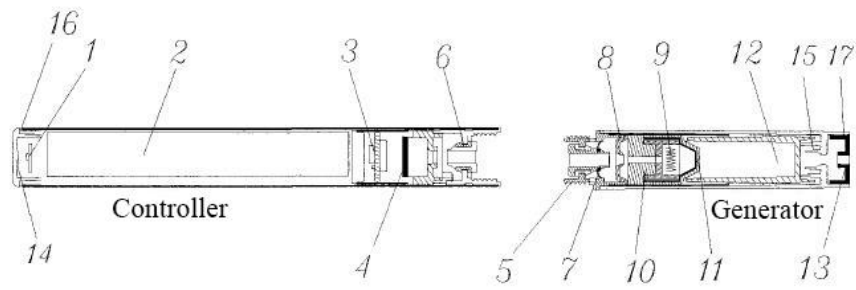


Fig. 2

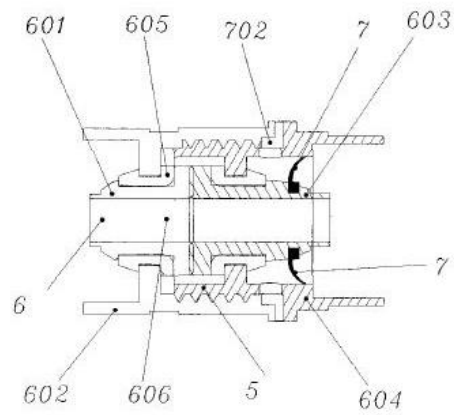


Fig. 3

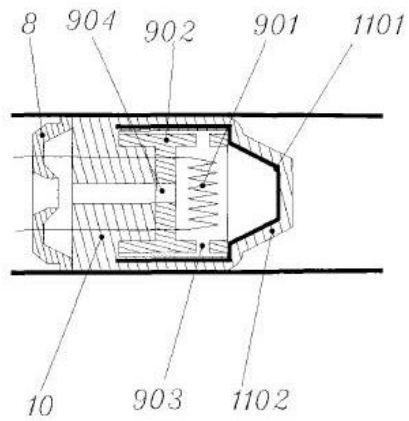


Fig. 4

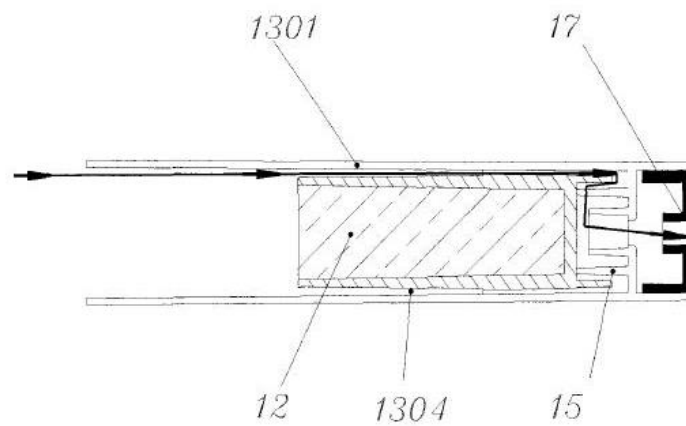


Fig. 5

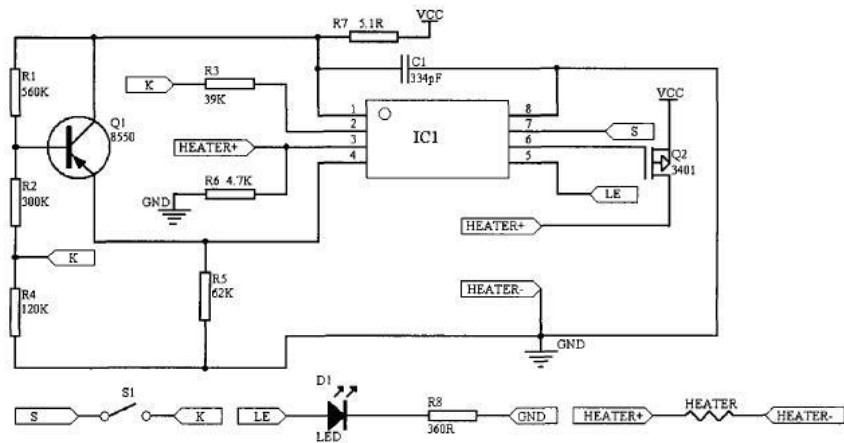


Fig. 6