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Date: October 6, 2011

To whom it may concern:

This is to certify that the attached translation from Chinese into English is an accurate representation of the documents received by this office.

The documents are designated as:

- Chinese Application no. 200620090805.0 Filed on May 16, 2006

David Druckman, Project Manager in this company, certifies that Jane Wei, who translated these documents, is fluent in Chinese and standard North American English and qualified to translate. David Druckman attests to the following:

"To the best of my knowledge, the aforementioned documents are a true, full and accurate translation of the specified documents."

Signature of David Druckman

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**Certification**

The annex of this certification is a copy of the following patent application filed with the  
Office

Filing Date: May 16, 2006

Application No. 200620090805.0

Category of the application: Utility Model

Title of the invention-creation: Emulation aerosol sucker

Applicant: Han Li

Inventor or designer: Han Li

Director of the State Intellectual Property Office of the People's Republic of China: Tian

Lipu

July 04, 2007

What is claimed is:

1. An emulation aerosol sucker, characterized in that it comprises a battery assembly, an atomizing assembly and a cigarette bottle assembly, one end of the battery assembly is arranged with an external thread electrode (209), one end of the atomizing assembly is provided with an internal thread electrode (302), the battery assembly and the atomizing assembly are connected to become an emulation cigarette body via the thread electrodes, the cigarette bottle assembly is inserted into the other end of the atomizing assembly, thereby forming a cigarette type or a cigar type integration.

2. The emulation aerosol sucker according to claim 1, characterized in that the battery assembly comprises an indication light (202), a lithium battery (203), a MOSFET circuit board (205), a sensor (207), a silica gel corrugated separation membrane (208), a first thread electrode (209), a first negative pressure cavity hole (210) and a first housing (211), one end of the first housing (211) is arranged with the external thread electrode (209) and the other end thereof is installed with the indication light (202), in which one side of the light is provided with an indication light cap (201) with a fine hole (501) arranged thereon and the other side is connected with the lithium battery (203) and the MOSFET circuit board (205) in order, the sensor (207) is arranged on the MOSFET circuit board (205), the silica gel corrugated separation membrane (208) arranged with the first negative pressure cavity hole (210) thereon is disposed between the first thread electrode (209) and the sensor (207), and the sensor (207) is connected with the silica gel corrugated separation membrane (208) by a reed switch (212) fastened on the sensor (207).

3. The emulation aerosol sucker according to claim 2, characterized in that a MCU (206) is added between the MOSFET circuit board (205) and the sensor (207), and a display screen (204) is added on the surface of the first housing (211).

4. The emulation aerosol sucker according to claim 3, characterized in that the MCU (206) scans the sensor at a power saving mode of pulse, restricts an atomizing dosage with an integral function of frequency to single operation time according to the signal parameters

of the sensor, further, the MCU (206) completes the following control functions: the pulse width modulation and overdischarge protection for a constant power output of current, an automatic cleaning function per several thousands of times of work, gradual lighting up and dying down control of the indication light, display of work times and battery capacity, and self recovery from shut down due to malfunctions of the sensor.

5. The emulation aerosol sucker according to claims 2 or 3, characterized in that the sensor (207) is a switch type sensor made of an elastic alloy sheet, a Hall device with linear output, a semiconductor force sensitive chip, a semiconductor matrix thermoelectric bridge chip or a capacitive and inductive sensor.

6. The emulation aerosol sucker according to claims 2 or 3, characterized in that the indication light (202) is two red light emitting diodes.

7. The emulation aerosol sucker according to claims 2 or 3, characterized in that the silica gel corrugated separation membrane (208) is further made of fluorine rubber, butyronitrile rubber or elastic alloy membrane.

8. The emulation aerosol sucker according to claims 2 or 3, characterized in that the external thread electrode (209) is made of a gold coated stainless steel or brass part with a central hole arranged thereon.

9. The emulation aerosol sucker according to claims 2 or 3, characterized in that the lithium battery (203) is a rechargeable polymer lithium battery or a rechargeable lithium ion battery.

10. The emulation aerosol sucker according to claim 1, characterized in that the atomizer assembly comprises an internal thread electrode (302), an air-liquid separator (303), an atomizer (307) and a second housing (306), one end of the second housing (306) is connected with the cigarette bottle assembly through insertion and the other end thereof is arranged with an internal thread electrode (302) provided with a second negative pressure cavity hole (301) thereon, the air-liquid separator (303) and the atomizer (307) are

connected to the internal thread electrode (302) in sequence, and an air entry passage (502) is provided on the second housing (306).

11. The emulation aerosol sucker according to claim 10, characterized in that the internal thread electrode (302) is made of a gold coated stainless steel or brass part with a central hole arranged thereon.

12. The emulation aerosol sucker according to claim 10, characterized in that the air-liquid separator (303) is made of stainless steel or plastic with a hole arranged thereon.

13. The emulation aerosol sucker according to claim 10, characterized in that the atomizer (307) is a capillary impregnation type atomizer or a spray type atomizer, a heating element (305) is arranged in the atomizer (307), and a spray hole (304) is arranged on the spray type atomizer.

14. The emulation aerosol sucker according to claim 13, characterized in that the spray hole (304) is formed by opening a hole on foam ceramics, micro-porous glass, foam metal, stainless steel fibrofelt or chemical fiber.

15. The emulation aerosol sucker according to claim 13, characterized in that the heating element (305) is made by winding nichrome wire, aludirome wire or platinum wire on a micro-porous ceramics frame, it can also be a porous element made of conducting ceramics or PTC ceramics and having a sintered electrode, the surface of the heating element (305) is sintered to be high temperature glaze to secure zeolite particles made of natural zeolite, artificial organic micro-porous ceramics or aluminium oxide particles.

16. The emulation aerosol sucker according to claim 1, characterized in that the cigarette bottle assembly comprises a cigarette liquid bottle (401), a fiber (402) and a suction nuzzle (403), the fiber (402) containing cigarette liquid is contained in one end of the cigarette liquid bottle (401) which is inserted into the second housing (306) and abuts on the atomizer (307), the suction nozzle (403) is arranged on the other end of the cigarette

liquid bottle (401), and an air entry passage (503) is arranged between the fiber (402) and the interior wall of the cigarette liquid bottle (401).

17. The emulation aerosol sucker according to claim 16, characterized in that the cigarette liquid bottle (401) and the suction nozzle (403) are made of non-toxic plastic.

18. The emulation aerosol sucker according to claim 16, characterized in that the fiber (402) is made of polypropylene fiber or nylon fiber.

19. The emulation aerosol sucker according to claim 16, characterized in that the cigarette liquid for atomizing in the fiber (402) contains 0.1- 3.5 % of nicotinamide, 0.05- 5% of essence for cigarette, 0.1- 3% of organic acid, 0.1-0.5% of stabilizing agent and the rest of propylene glycol.

20. The emulation aerosol sucker according to claim 1, characterized in that the sucker and the connection structure can be loaded with conventional medicines to be used as an intrapulmonary inhalation medicine administration device.

## **Emulation Aerosol Sucker**

### **Technical field**

The present utility model relates to an electronic suction device, and particularly to an emulation aerosol sucker which does not contain tar but only nicotinamide (nicotine).

### **Background**

Under the current situation that “smoking is harmful to health” has been well known knowledge, there are still one billion smokers in the whole world and the number of smokers is still rising every year. The first international anti-smoking convention Framework Convention on Tobacco Control has been established by the World Health Organization (WHO) on March 01, 2003. A number provided by the WHO indicates that smoking causes death of 4.9 millions of people every year. Although smoking can result in serious diseases of the respiratory system and cancers, it is very difficult to have smokers quit smoking.

The effective assembly of cigarette is nicotinamide (i.e. nicotine). During smoking, with the burning of cigarette, a large amount of atomized drops of tar produced by nicotinamide enter into the alveoli and is absorbed quickly, nicotinamide acts on the central nervous system of a receptor, causing “a feeling of inebriation” like exhilarant such as feeling light-headed or flying .

Nicotinamide is a micromolecule alkaloid, not harmful to human body with a small dosage and also it has a very short half life in blood. The harmful substance in tobacco mainly is tar comprised of thousands of assemblies and dozens of which are carcinogen. It is currently proved that passive smoking of non smokers is much more harmful.

In order to find cigarette substitutes having nicotinamide and being free of harmful tar, many inventions provide products made by pure nicotinamide such as “ Smoking Quit Patch” , “Nicotinamide Gargle”, “Spraying Agent Packed in a High Pressure Gas Tank Containing Propellant”, “Nicotinamide Gum”, “Nicotinamide Beverage”, etc.. Although these products are free of harm of tar, they cannot cause the feeling of “satisfied”



produced by nicotinamide because an effective peak concentration cannot be created in blood due to a slow absorption of nicotinamide. Meanwhile, the habit of “draw” or “suction” established by smokers is deprived; hence similar products cannot be real products for stopping smoking or being substitutes of cigarette.

#### **Summary of the utility model**

An object of the present utility model is to provide an emulation aerosol sucker with a function of quitting smoking and being a substitute of cigarette.

The technical solution of the present utility model is a creation of the utility model “atomizing electronic cigarette” filed with the State Intellectual Property Office of China on April 14, 2000, with Chinese application No. 200420031182.0 and international application No. PCT/CN2005/000337.

The object of the present utility model is achieved by the following technical solution:

The present utility model includes a battery assembly, an atomizing assembly and a cigarette bottle assembly, one end of the battery assembly is arranged with an external thread electrode, one end of the atomizing assembly is provided with an internal thread electrode, the battery assembly and the atomizing assembly are connected to become an emulation cigarette body via thread electrodes, the cigarette bottle assembly is inserted into the other end of the atomizing assembly, thereby forming a cigarette type or cigar type integration.

In which, the battery assembly comprises an indication light, a lithium battery, a MOSFET circuit board, a sensor, a silica gel corrugated separation membrane, a first thread electrode, a first negative pressure cavity hole and a first housing, one end of the first housing is arranged with the external thread electrode and the other end thereof is installed with the indication light, in which one side of the light is provided with the indication light cap with a fine hole arranged thereon and the other side is connected with the lithium battery and the MOSFET circuit board in order, the sensor is arranged on the MOSFET circuit board, the silica gel corrugated separation membrane arranged with the

first negative pressure cavity hole thereon is disposed between the first thread electrode and the sensor, and the sensor is connected with the silica gel corrugated separation membrane by a reed switch fastened on the sensor. A MCU is added between the MOSFET circuit board and the sensor, and a display screen is added on the surface of the first housing. The MCU scans the sensor at a power saving mode of pulse, restricts an atomizing dosage with an integral function of frequency to single operation time according to the signal parameters of the sensor, at the same time, the MCU completes the following control functions: the pulse width modulation and overdischarge protection for a constant power output of current, an automatic cleaning function per several thousands of times of work, gradual lighting up and dying down control of the indication light, display of work times and battery capacity, and self recovery from shut down due to malfunctions of the sensor. The sensor is a switch type sensor made of an elastic alloy sheet, a Hall device with linear output, a semiconductor force sensitive chip, a semiconductor matrix thermoelectric bridge chip or a capacitive and inductive sensor. The indication light is two red light emitting diodes. The silica gel corrugated separation membrane is also made of fluorine rubber, butyronitrile rubber or elastic alloy membrane. The external thread electrode is made of a gold coated stainless steel or brass part with a central hole arranged thereon. The lithium battery is a rechargeable polymer lithium battery or a rechargeable lithium ion battery. The atomizer assembly comprises an internal thread electrode, an air-liquid separator, an atomizer and a second housing, one end of the second housing is connected with the cigarette bottle assembly by insertion and the other end thereof is arranged with an internal thread electrode provided with a second negative pressure cavity hole thereon, the air-liquid separator and the atomizer are connected to the internal thread electrode in sequence, an air entry passage is provided on the second housing. The internal thread electrode is made of a gold coated stainless steel or brass part with a central hole drilled thereon. The air-liquid separator is made of stainless steel or plastic with a hole drilled thereon. The atomizer is a capillary impregnation type atomizer or a spray type atomizer, a heating element is arranged in the atomizer, and a spray hole is arranged on the spray type atomizer. The spray hole is formed by opening a hole on foam ceramics, micro-porous glass, foam metal, stainless steel fibrofelt or chemical fiber. The heating element is made by winding nichrome wire, aludirome wire or platinum wire on a micro-porous ceramics frame, is also a porous

element having a sintered electrode which is made of conducting ceramics or PTC ceramics, the surface of the heating element is sintered to be high temperature glaze to secure zeolite particles made of natural zeolite, artificial organic micro-porous ceramics or aluminium oxide particles. The cigarette bottle assembly comprises a cigarette liquid bottle, fiber and a suction nuzzle, the fiber containing cigarette liquid is contained in one end of the cigarette liquid bottle, this end is inserted into the second housing and abuts on the atomizer, the suction nozzle is arranged on the other end of the cigarette liquid bottle, and an air entry passage is arranged between the fiber and the interior wall of the cigarette liquid bottle. The cigarette liquid bottle and the suction nozzle are made of non-toxic plastic. The fiber is made of polypropylene fiber or nylon fiber. The cigarette liquid for atomizing in the fiber (402) contains 0.1- 3.5 % of nicotinamide, 0.05- 5% of essence for cigarette, 0.1- 3% of organic acid, 0.1-0.5% of stabilizing agent and the rest of propylene glycol. The sucker and the connection structure can load conventional medicines to be used as a medicine administration device for intrapulmonary inhalation.

The advantages and beneficial effects of the present utility model are as follows: according to the present utility model, there is no tar produced when one smokes; the risk of causing cancer is greatly reduced; a user still obtains the feeling and excitement of smoking; there is no need of lighting, and there is no harm of fire disaster. The device and connection structure of the present utility model can load conventional medicines to be used as a medicine administration device for intrapulmonary inhalation.

#### **Brief description of the drawings**

Figure 1 is an exterior schematic view of the cigarette type of the present utility model.

Figure 2A is a structural schematic view of a battery assembly according to the present utility model.

Figure 2B is another structural schematic view of a battery assembly according to the present utility model.

Figure 3 is a schematic view of an atomizing assembly according to the present utility model.

Figure 4 is a schematic view of a cigarette bottle assembly according to the present utility model.

Figure 5A is an interior structural schematic view of the present utility model.

Figure 5B is another interior structural schematic view of the present utility model.

Figure 6 is a structural schematic view of a power charger according to the present utility model.

Figure 7 is a diagram of circuit principle of a MCU and a MOSFET according to the present utility model.

Figure 8 is a structural schematic view of a capillary impregnation type atomizer according to the present utility model.

Figure 9 is a left view of figure 8.

Figure 10 is a structural schematic view of a spray type atomizer according to the present utility model.

Figure 11 is a left view of figure 10.

Figure 12 is a structural schematic view of a cigar exterior of the present utility model.

#### **Detailed description of the utility model**

The present utility model will be further described in detail with reference to the drawings.

##### **Embodiment 1**

As shown in figure 1, an exterior of the present utility is similar to a cigarette inserted into a cigarette holder; a battery assembly, an atomizing assembly and a cigarette bottle assembly are included. One end of the battery assembly is arranged with an external thread electrode 209, and one end of the atomizing assembly is provided with an internal thread electrode 302; the both assemblies are connected to become an emulation cigarette body via the thread electrodes, the cigarette bottle assembly is inserted into the other end of the atomizing assembly, thus forming a cigarette type emulation aerosol sucker together.

As shown in figure 2A, the battery assembly includes an indication light 202, a lithium battery 203, a MOSFET circuit board 205, a sensor 207, a silica gel corrugated separation membrane 208, a first thread electrode 209, a first negative pressure cavity hole 210 and a first housing 211. One end of the first housing 211 is arranged with the external thread

electrode 209 and the other end thereof is installed with the indication light 202, in which one side of the light is provided with an indication light cap 201 arranged with a fine hole 501 thereon and the other side is connected with the lithium battery 203 and the MOSFET (metallic oxide semiconductor field effect transistor) circuit board 205 in order. The sensor 207 is arranged on the MOSFET circuit board 205, the silica gel corrugated separation membrane 208 arranged with the first negative pressure cavity hole 210 thereon is disposed at between the first thread electrode 209 and the sensor 207, and the sensor 207 is connected with the silica gel corrugated separation membrane 208 by a reed switch 212 fastened on the sensor 207.

Wherein: the sensor 207 can be a switch type sensor made of an elastic alloy sheet, a Hall device with linear output, a semiconductor force sensitive chip, a semiconductor matrix thermoelectric bridge chip or a capacitive and inductive sensor. The indication light 202 is two red light emitting diodes. The lithium battery 203 can be a rechargeable polymer lithium battery or a rechargeable lithium ion battery. The external thread electrode 209 is made of a gold coated stainless steel or brass part with a central hole arranged thereon. Silica gel corrugated separation membrane 208 can also be made of fluorine rubber, butyronitrile rubber or elastic alloy membrane.

As shown in figure 3, the atomizer assembly includes an internal thread electrode 302, an air-liquid separator 303, an atomizer 307 and a second housing 306. One end of the second housing 306 is connected with the cigarette bottle assembly by insertion and the other end thereof is arranged with an internal thread electrode 302 provided with a second negative pressure cavity hole 301 thereon. The air-liquid separator 303 and the atomizer 307 are connected to the internal thread electrode 302 in sequence. An air entry passage 502 is provided on the second housing 306. Wherein: the air-liquid separator 303 is made of steel or plastic with a hole drilled. The internal thread electrode 302 is made of stainless steel or plastic with a central hole drilled therein.

Atomizer 307 can be the ones as shown in figures 8 and 9 being a capillary impregnation type atomizer, or can be the ones as shown in figures 10 and 11 being a spray type atomizer. In the present embodiment, it is a spray type atomizer.

As shown in figure 4, the cigarette bottle assembly includes a cigarette liquid bottle 401, fiber 402 and a suction nuzzle 403. The fiber 402 containing cigarette liquid is contained in one end of the cigarette liquid bottle 401; this end is inserted into the second housing 306 and abuts against the atomizer 307. The suction nozzle 403 is arranged on the other end of the cigarette liquid bottle 401, and an air entry passage 503 is arranged between the fiber 402 and the interior wall of the cigarette liquid bottle 401.

As shown in figure 5A, the battery assembly fully charged as shown in figure 2A is tightly screwed into the atomizer assembly as shown in figure 3, and then the cigarette bottle assembly as shown in figure 4 is inserted therein, thereby forming a work ready status of the present utility model. When a user slightly sucks the nozzle 403, a negative pressure is formed on the silica gel corrugated separation membrane 208 via the air entry passage 503 and the first and second negative pressure cavity holes 210 and 301, the silica gel corrugated separation membrane 208 changes its shape under the function of the difference in suction pressures to act on the reed switch 212 and the sensor 207 to activate the MOSFET circuit board 205. At this moment, the indication light 202 gradually lights up, the lithium battery 203 supplies power to a heating element 305 in the atomizer 307 through the MOSFET circuit board 205 and the internal and external thread electrodes 302 and 209, causing the heating element 305 in the atomizer 307 to produce heat. The fiber 402 in the cigarette liquid bottle 401 contains cigarette liquid which impregnates the micro-porous ceramics 801 in the atomizer; air enters through the air entry passage 502 to form a mixture of air and liquid in a spray hole 304 of the atomizer 307 through an air through hole on the air-liquid separator 303. The mixture of air and liquid is sprayed onto the heating element 305 to be gasified, quickly absorbed into the airflow and condensed to be aerosol, which is sucked out through the suction nozzle 403 via the air entry passage 503 to form a white mist type aerosol.

When suction stops, the reed switch 212 and the sensor 207 are reset, the atomizer 307 stops working, the indication light 202 gradually dies down. When work times reach a preset value, the atomizer 307 provides a word delay of 5 to 20 seconds per time to clean a small amount of dirt accumulated on the heating element 305.

Besides micro-porous ceramics, foam ceramics, micro-porous glass, foam metal, stainless steel fibrofelt, dacron fiber, nylon fiber, acrylics fiber, aramid fiber, or rigid porous plastic can be used as a liquid supply material of the atomizer 307. A micro-porous ceramics frame wound with a thermo electric material such as nichrome wire, aludirome wire, platinum wire can be used as the heating element 305, and a porous element made of conducting ceramics or PTC (Positive Temperature Coefficient temperature sensitive ceramics) material carrying a sintered electrode can also be used. The surface of the heating element 305 is sintered to be high temperature glaze to secure zeolite particles made of natural zeolite, artificial organic micro-porous ceramics or aluminium oxide particles. The cigarette liquid bottle 401 and suction nozzle 403 in the cigarette bottle assembly made of non-toxic plastic are internally pasted with fiber 402 made of polypropylene fiber or nylon fiber to absorb cigarette liquid. In the battery assembly, a micro-porous 501 is arranged on the indication light cap 201 for balancing the difference of pressures on both sides of the silica gel corrugated separation membrane 208.

The cigarette liquid for atomizing contains 0.1- 3.5 % of nicotinamide, 0.05- 5% of essence for cigarette, 0.1- 3% of organic acid, 0.1-0.5% of stabilizing agent and the rest of propylene glycol.

The first housing 211 and the second housing 306 of the present utility model are made of stainless steel pipes or copper alloy pipes, and coated with baked-enamel for simulating the color of cigarette.

As shown in figure 12, according to the present utility model, the diameter of the battery assembly can be increased by proportion so as to be consistent with the diameter of the atomizing assembly, and leaf veins and matte brown yellow baked-enamel can be covered on the housing to create a cigar type emulation aerosol sucker.

For recharging of the lithium battery 203 of the present utility model, a thread electrode 601 matched with the external thread electrode 209 on the battery assembly as shown in figure 6 can be used as an interface to charge.

## Embodiment 2

As shown in figure 2B, a difference between this embodiment and the embodiment 1 is as follows: a MCU206 is added between the MOSFET circuit board 205 and the sensor 207; a display screen 204 is added on the surface of the first housing 211 for displaying power capacity of the lithium battery 203 and times of smoking.

As shown in figure 5B, the battery assembly fully charged as shown in figure 2B is tightly screwed into the atomizer assembly as shown in figure 3, and then the cigarette bottle assembly as shown in figure 4 is inserted therein, forming a work ready status of the present utility model. When a user slightly sucks the nozzle 403, a negative pressure is produced on the silica gel corrugated separation membrane 208 via the air entry passage 503 and the first and second negative pressure cavity holes 210 and 301, the silica gel corrugated separation membrane 208 changes its shape under the function of the difference in suction pressures to act on the reed switch 212 and the sensor 207 to activate the MOSFET circuit board 205. Meanwhile, the indication light 202 gradually lights up, the lithium battery 203 supplies power to the heating element 305 in the atomizer 307 through the MOSFET circuit board 205 and the internal and external thread electrodes 302 and 209, causing the heating element 305 in the atomizer 307 to produce heat. The fiber 402 in the cigarette liquid bottle 401 contains the cigarette liquid which impregnates the micro-porous ceramics 801 in the atomizer; air enters in through the air entry passage 502 to form a mixture of air and liquid in the spray hole 304 of the atomizer 307 through an air through hole on the air-liquid separator 303. The mixture of gas and liquid is sprayed to the heating element 305 to be gasified, quickly absorbed into the airflow, and condensed to be aerosol, which is sucked out through the suction nozzle 403 via the air entry passage 503 to form a white mist type aerosol.

As shown in figure 7, when a suction action causes the sensor to be activated, MCU206 scans the sensor 207 at a power saving mode of pulse, and restricts the atomizing dosage with the integral function of frequency to single operation time according to the signal parameters of the sensor 207. Meanwhile, MCU206 completes the following control functions: the pulse width modulation and overdischarge protection for a constant power



output of current, an automatic cleaning function per several thousands of times work, gradual lighting up and dying down control of the indication light, display of work times and battery capacity, self recovery from shut down due to malfunctions of the sensor.

The device and connection structure of the present utility model can load conventional medicines to be used as an intrapulmonary inhalation medicine administration device.

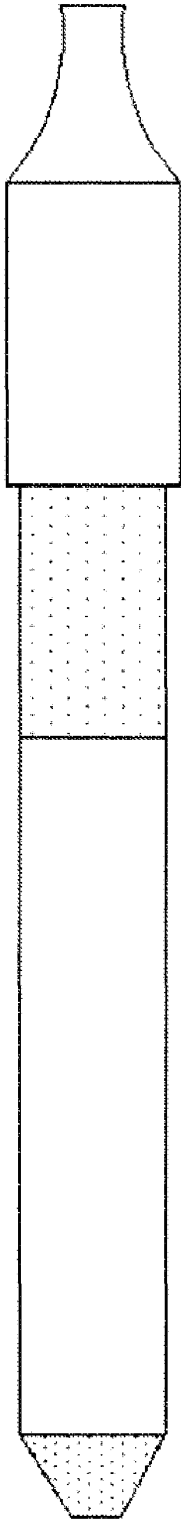


Figure 1

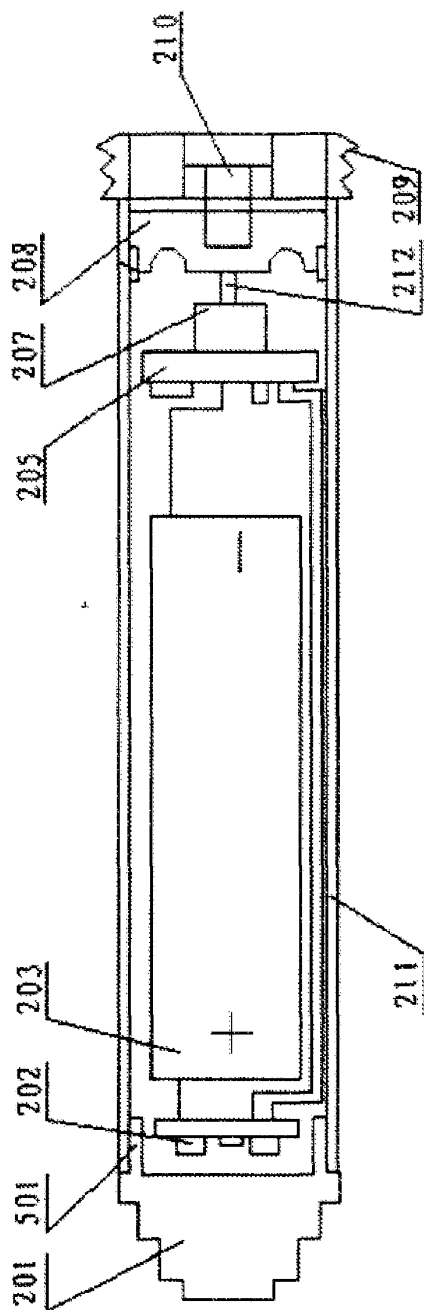


Figure 2A

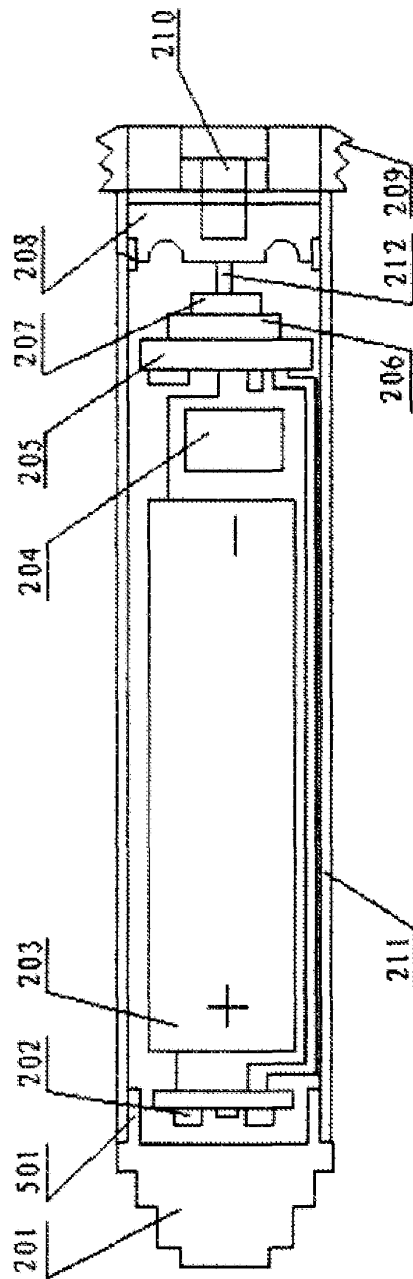


Figure 2B

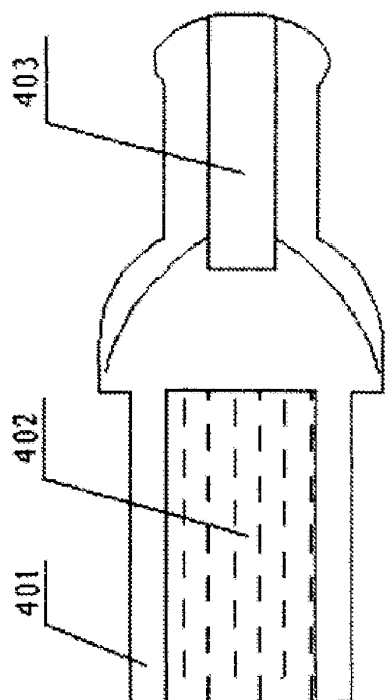


Figure 4

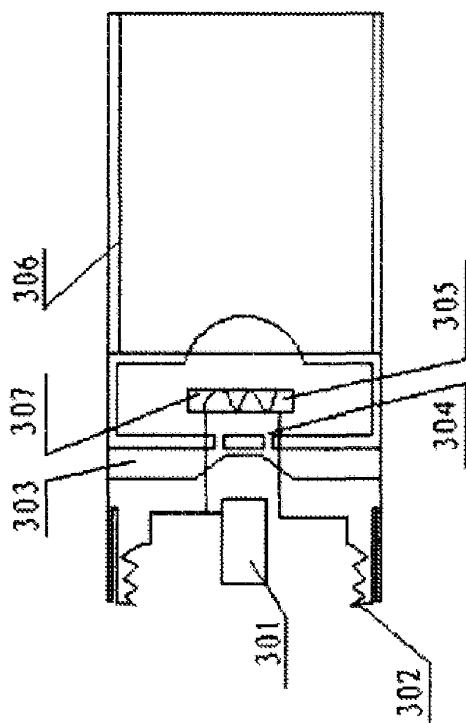


Figure 3

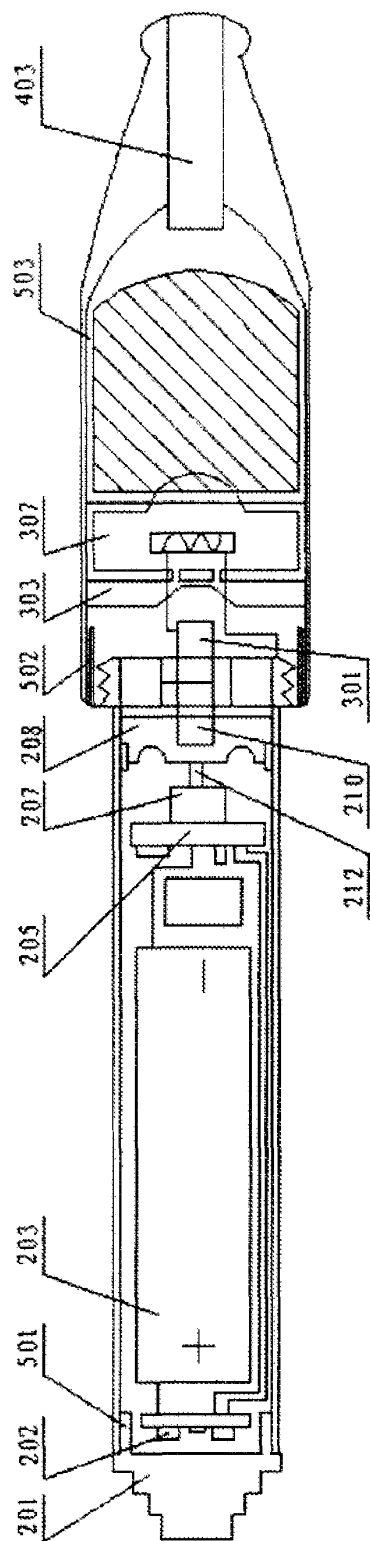


Figure 5A

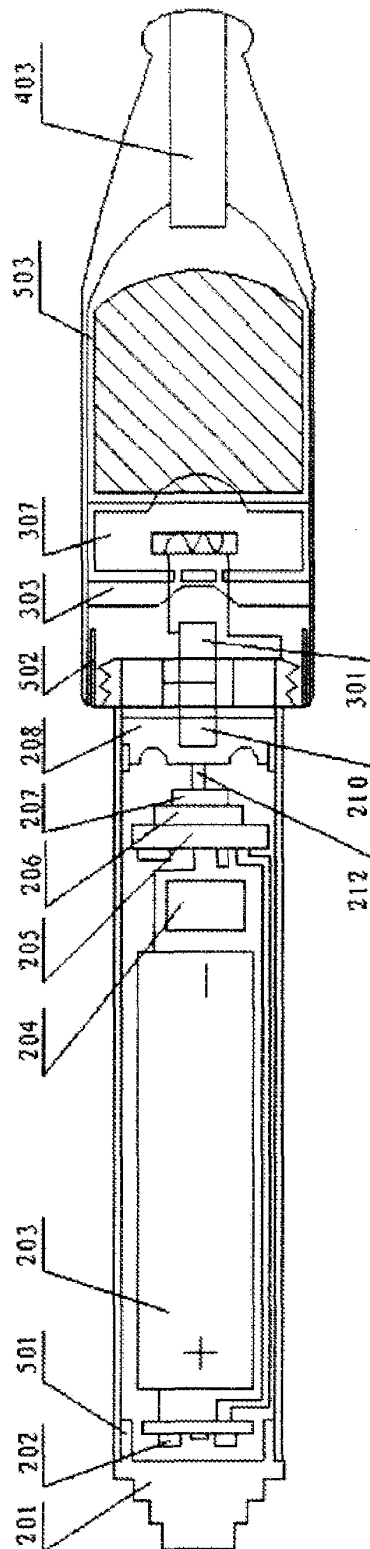


Figure 5B

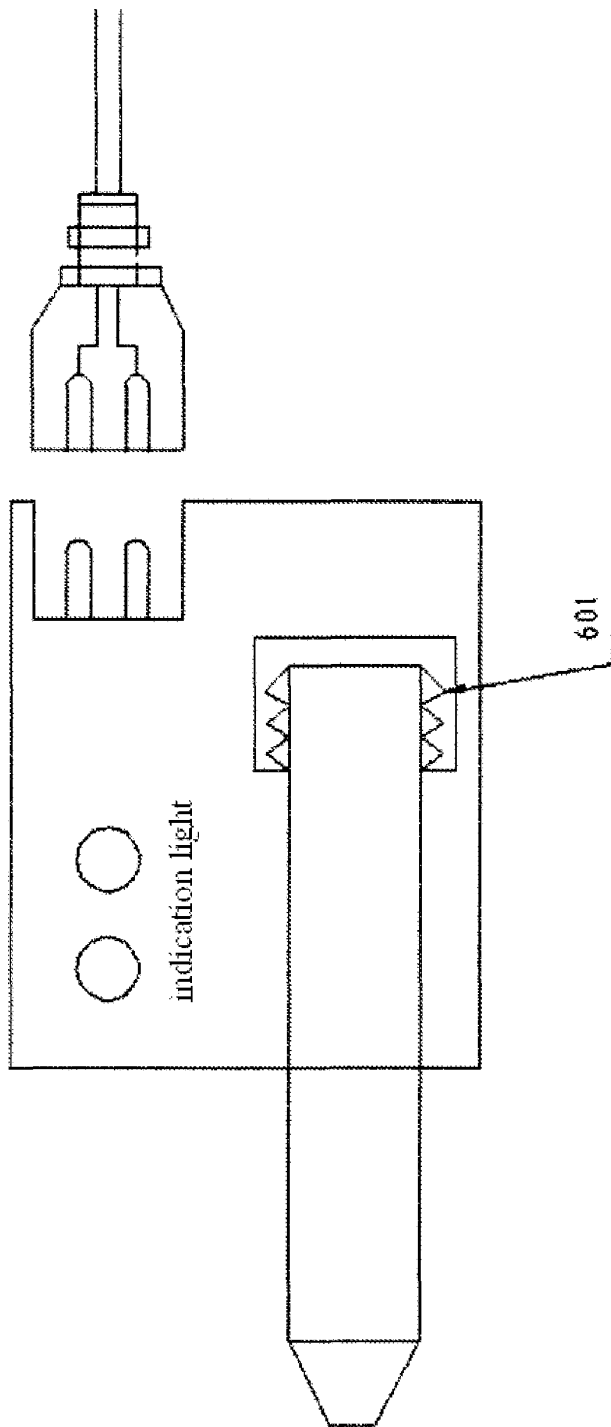


Figure 6



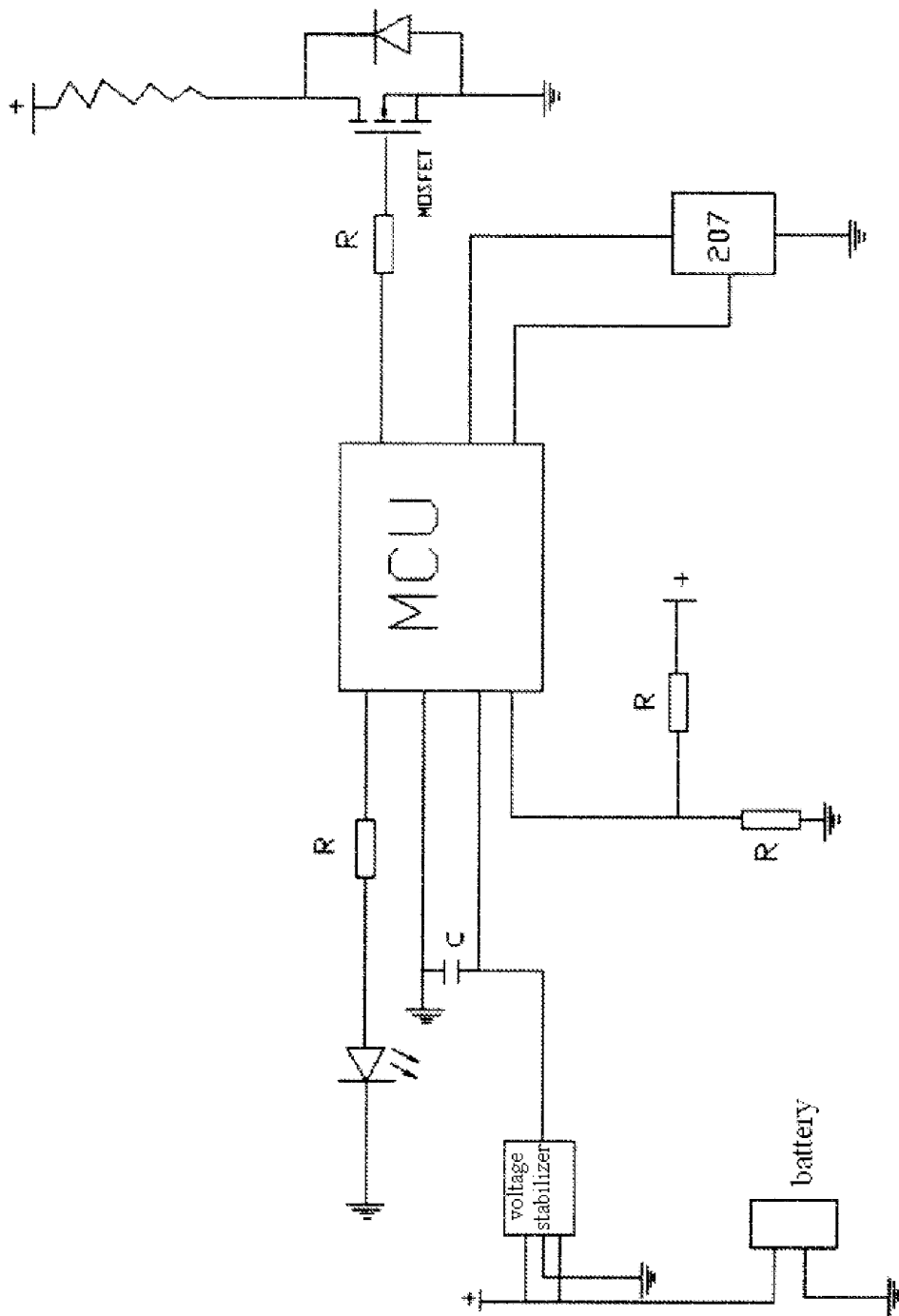


Figure 7

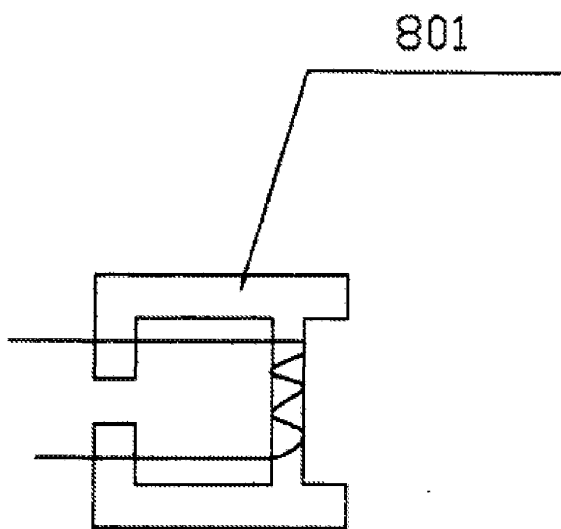


Figure 8

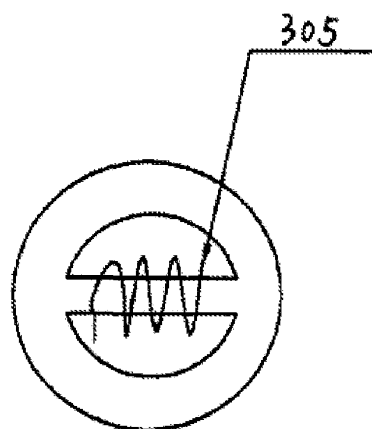


Figure 9

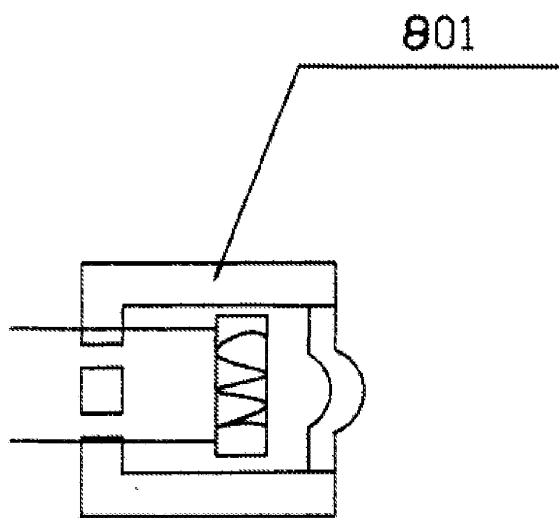


Figure 10

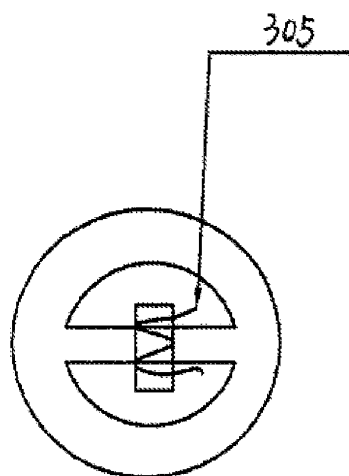


Figure 11

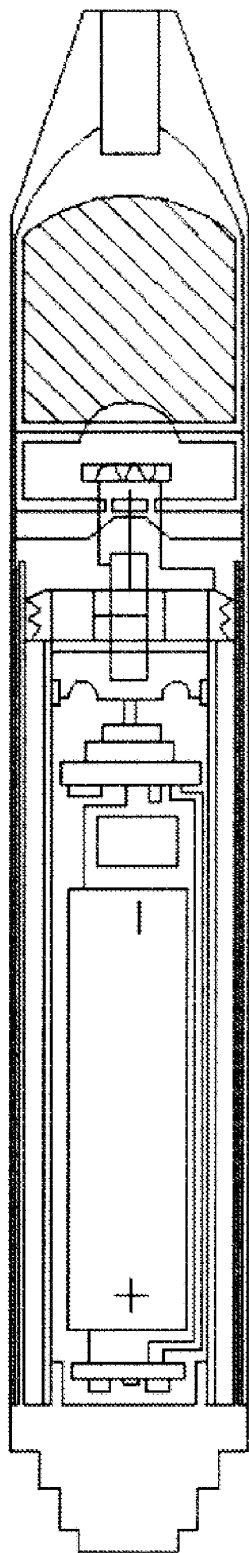


Figure 12