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Certification

Park IP Translations

This is to certify that the attached translation is, to the best of my knowledge and belief, a true and accurate translation from Chinese into English of the patent that is entitled: An Aerosol Electronic Cigarette



Abraham I. Holczer

Project Manager

Park Case # 40672

134 W. 29th Street 5th Floor • New York, N.Y. 10001
Phone: 212-581-8870 • Fax: 212-581-5577

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(71)(72) Inventor/Applicant: HON Lik, [CN/CN]; Room1010, 10/F, 168 Connaught Road Central(WEST TOWER), Central, Hong Kong (CN)

(74) Agent: (SHENYANG PATENT & TRADEMARK AGENCY) ACADEMIA SINICA ; 24 Road Sanhao, Heping District, Shenyang, Liaoning 110004 (CN).

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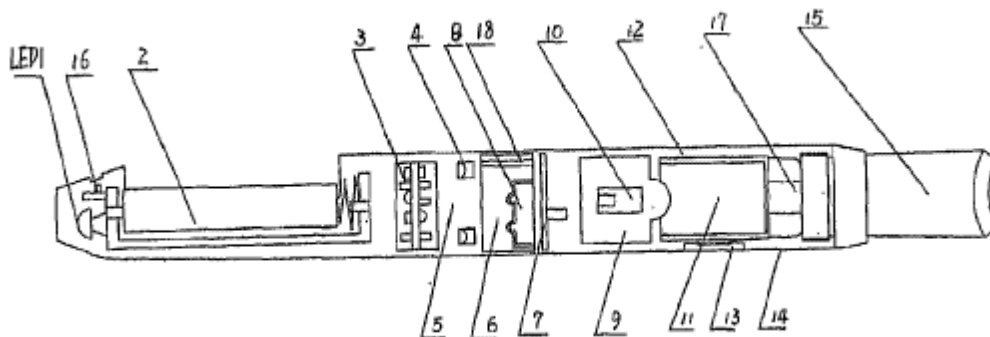
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(54) Title: AN AEROSOL ELECTRONIC CIGARETTE



(57) Abstract: This invention relates to an aerosol electronic cigarette just containing nicotine without tar, which includes a shell and a suction nozzle. On the exterior wall of the shell, there is an air orifice, while there are an electronic circuit board, a constant pressure cavity, a sensor, a gas-liquid separator, an atomizer, and a supplying bottle orderly located in the interior of the shell, wherein the electronic circuit board consists of an electronic switching circuit and a high-frequency generator. At one side of the sensor there is an air duct. A negative pressure cavity is located in the sensor. The atomizer connects with the supplying bottle, and there is an atomizing cavity located in the atomizer. An antiextrusion ring used to fix the supplying bottle is located between the shell and one side of the supplying bottle. At the other side of the supplying bottle there is a mirage duct. The air orifice, the constant pressure, the sensor, the gas-liquid separator, the atomizer, and the mirage duct connect orderly and throughout. Without tar, this invention reduces the risk of suffering cancer, meets the requirement of the smoker, need no ignition, and has no endanger of fire.

5 The present invention relates to an electronic cigarette, in particular to an electronic atomization cigarette that contains only nicotine without tar.

Background Art

10 Despite it is commonly known that "smoking is harmful to your health", the number of smokers worldwide is up to 1 billion, and the number is increasing every year, On March 1, 2003, the World Health Organization (WHO) concluded a global Framework Convention on Tobacco Control. According to the statistical data from WHO, about 4.9 million people die of diseases caused by smoking each year. Although smoking may cause serious respiratory diseases and cancer, it remains extremely difficult for smokers to quit smoking completely.

15 The active ingredient in a cigarette is nicotine. During smoking, nicotine, along with a lot of tar aerosol droplets produced in the cigarette burning, enters smoker's alveolus and is rapidly absorbed. After being absorbed into the blood of a smoker, nicotine then produces its effect on the receptors of the smoker's central nervous system, which makes him/her relax and enjoy an inebriety similar to that produced by an exhilarant.

20 Nicotine is a kind of alkaloid with low molecular weight, a small dose of nicotine is essentially harmless to human body and its half-life in blood is quite short. Actually the major harmful substance in tobacco is tar, tar in tobacco is composed of thousands of ingredients, tens of which are carcinogenic substances. At present it has been proven that passive smoking can be more harmful on non-smokers.

25 Some cigarette substitutes that contain only nicotine without tar have been proposed, many of them, such as "nicotine patch", "nicotine mouthwash", "spray agent packaged in high pressure gas tank with propellant", "nicotine chewing gum", "nicotine drink" etc., are made of pure nicotine. Although these cigarette substitutes are free from tar, their major disadvantage is that an effective peak concentration can not be reached in the blood of a smoker due to slow absorption of nicotine and thus it can not make a smoker get real fun, in addition, these cigarette substitutes can not satisfy habitual smoking actions of a smoker, for example, inhaling action or sucking action, and thus are not likely to be widely accepted as effective substitutes for quitting smoking or cigarette substitutes.

The Summary of the Invention

35 To overcome the above-mentioned drawbacks, an objective of the present invention is to provide an electronic atomization cigarette that functions as substitutes for quitting smoking and cigarette substitutes.

The objective of the present invention is achieved by the following technical solution.

40 The present invention includes a shell; a mouthpiece; an air inlet provided in the external wall of the shell; an electronic circuit board, a normal pressure cavity, a sensor, a vapor-liquid separator, an atomizer, a liquid-supplying bottle arranged sequentially within the shell; a stream passage provided on one side of the sensor; a negative pressure cavity provided in the sensor; an atomization cavity arranged in the atomizer; a retaining ring for locking the liquid-supplying bottle provided between one side of the liquid-supplying bottle and the shell; and
45 an aerosol passage provided on the other side of the liquid-supplying bottle, wherein the electronic circuit board comprises an electronic switching circuit and a high frequency generator; the liquid-supplying bottle is in contact with the atomizer; and the air inlet, normal pressure cavity, vapor-liquid separator, atomizer, aerosol passage, gas vent and mouthpiece are sequentially interconnected. A LED and a cell are provided at the front end within the
50 shell, collectively constituting an integrity like a cigarette holder, cigar or a pipe.

the shell, a ripple film is provided between the sensor and the negative pressure cavity inside the sensor; a first magnetic steel, a second magnetic steel and a Reed switch connected
5 between them provided within the sensor, wherein the second magnetic steel is attached to the ripple film; a silicon gel check valve is provided within the sensor, a third magnetic steel is provided the silicon gel check valve, and a Reed switch is provided outside the valve, on the side close to the magnetic steel; a through hole is arranged on the vapor-liquid separator,
10 a silicon gel check valve covers the through hole on the vapor-liquid separator; an overflow hole is provided on the atomization cavity wall of the atomization cavity, a heating element is provided within the atomization cavity, a long stream ejection hole is provided on one side of the heating element, the porous body is arranged outside around the atomization cavity wall, the first piezoelectric element is provided on one side of the atomizer, and a bulge is provided on the other side; the second piezoelectric element is additionally provided in the atomizer;
15 the porous body in the atomizer can be made of foam nickel, stainless steel fiber felt, high molecule polymer foam and foam ceramic; the heating element can be made of platinum wire, nickel chromium alloy or iron chromium aluminum alloy wire with rare earth element, or may be made into a sheet form with conductive ceramics or PTC ceramics; the atomization cavity wall can be made of aluminum oxide or ceramic; the vapor-liquid separator can be
20 made of plastic or silicon rubber; the solution storage porous body is included in the liquid-supplying bottle, and can be filled with polypropylene fiber, terylene fiber or nylon fiber, or be filled with plastics that are shaped by foaming; alternatively, it may be modeled into a column with laminated layers by polyvinyl chloride, polypropylene, polycarbonate; the Reed switch, the first magnetic steel, the second magnetic steel, the ripple film can be replaced by a
25 semiconductor strain gauge with sealed film, which is mounted in the place of the sensor ripple film.

The present invention also discloses an electronic atomization cigarette with another structure, wherein the atomizer is postposed within the shell, the liquid-supplying bottle is arranged between the vapor-liquid separator and the atomizer, and a spring piece for pressing
30 the liquid-supplying bottle on the atomizer is arranged at one end of the liquid-supplying bottle.

The advantages of the present invention include smoking without tar, significantly reducing the carcinogenic risk. Furthermore users still feel as if they are smoking and experiencing the same excitement, and the cigarette is no need to be lit and is no fire risk.

35 With slight modification of the solution storage container, the device and connecting structures of the present invention can be filled with conventional drug for pulmonary administration apparatus.

Description of the Drawings

40 Fig. 1 is a schematic diagram of an overall structure according to the present invention;

Fig. 2 is a schematic diagram of another overall structure according to the present invention;

Fig. 3 is a schematic diagram of a overall structure with a display screen according to the present invention;

45 Fig. 4 is a structural diagram of a sensor according to the present invention;

Fig. 5 is a structural diagram of a sensor with a silicon gel check valve according to the present invention;

Fig. 6 is a structural diagram of an atomizer according to the present invention;

50 Fig. 7 is a structural diagram of the ceramic member in an atomizer according to the present invention;

invention,
Fig. 10 is a structural diagram of another vapor-liquid separator according to the present invention;

Fig. 11 is a structural diagram of the connection of a liquid-supplying bottle and a mouthpiece according to the present invention;

Fig. 12 is a functional diagram of a circuit according to the present invention.

Detailed Description of the Invention

The present invention is further described below with reference to the accompanying drawings.

Embodiment 1

As shown in Fig. 1, the present invention can form an integrity like a cigarette holder, a cigar or a pipe. An air inlet 4 is provided on the external wall of the shell 14. A LED 1, a cell 2, an electronic circuit board 3, a normal pressure cavity 5, a sensor 6, a vapor-liquid separator 7, an atomizer 9, a liquid-supplying bottle 11 and a mouthpiece 15 are sequentially provided within the shell 14. The electronic circuit board 3 comprises an electronic switching circuit and a high frequency generator. A stream passage 18 is provided on one side of the sensor 6 and leading to the inner wall of the shell 14. As shown in Fig. 4, a negative pressure cavity 8 is provided in the sensor 6 and is separated from the sensor 6 by a ripple film 22. A first magnetic steel 20, a second magnetic steel 21 and a Reed switch K1 arranged between them is also provided within the sensor 6, and the second magnetic steel 21 is attached to the ripple film 22. The atomizer 9 is in contact with the liquid-supplying bottle 11 via the bulge 36, and kept apart from the shell 14, and the atomization cavity 10 is provided in the atomizer 9. As shown in Fig. 6 and 7, the overflow hole 29 is provided on the atomization cavity wall 25 of the atomization cavity 10. A heating element RL, which can be made of platinum wire, nickel chromium alloy or iron chromium aluminum alloy wire with rare earth element, is provided within the cavity, and can also be made into a sheet form. An ejection hole is provided on the side opposite to the heating element RL and the ejection hole can be determined to select either the long stream ejection hole 24 or the short stream ejection hole 30, depending on the material used for the atomization cavity wall 25. The long stream ejection hole 24 can employ slot structure of 0.1 mm-1.3 mm or circular hole structure of $\Phi 0.2$ mm-1.3 mm with a single and multiple holes. The short stream ejection hole 30 has the diameter of about 0.3 mm-1.3 mm. The atomization cavity wall 25 is surrounded with the porous body 27, which can be made of foam nickel, stainless steel fiber felt, high molecule polymer foam and foam ceramic. A first piezoelectric element M1 is also provided on the atomizer 9. The atomization cavity wall 25 can be made of aluminum oxide or ceramic. As shown in Fig. 9, a through hole is provided on the vapor-liquid separator 7, and can be made of plastic or silicon rubber. As shown in Fig. 11, a retaining ring 13 for locking the liquid-supplying bottle 11 is provided between one side of the liquid-supplying bottle 11 and the shell 14, an aerosol passage 12 is provided on the other side of the liquid-supplying bottle. The solution storage porous body 28 is provided in the liquid-supplying bottle, and can be filled with polypropylene fiber, terylene fiber or nylon fiber, or be filled with plastic that are shaped by foaming, such as polyamine resin foam column or polypropylene foam column; alternatively, it may be made of a column formed by molding polyvinyl chloride, polypropylene, polycarbonate into a stack of laminated layers. The air inlet 4, normal pressure cavity 5, sensor 6, vapor-liquid separator 7, atomizer 9, aerosol passage 12, gas vent 17, mouthpiece 15 are sequentially interconnected.

As shown in the functional diagram of the circuit in Fig. 12, field effect power transistor

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