

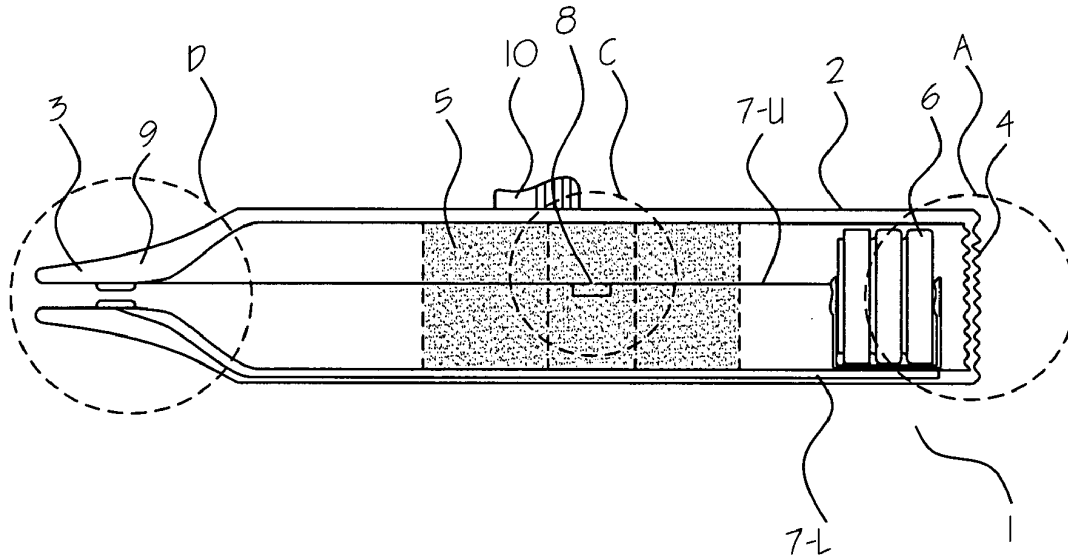


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(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2006/0016453 A1**  
Kim (43) **Pub. Date: Jan. 26, 2006**(54) **CIGARETTE SUBSTITUTE DEVICE**(52) **U.S. Cl.** ..... 131/194(76) **Inventor: In Yong Kim, Torrence, CA (US)**(57) **ABSTRACT**

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A spot-heating cigarette substitute device, which, in response to an electric power supplies and suction by a user, evaporates nicotine mixture and delivers them to the user. The device has a porous solid chip; an electric circuit is embedded therein for providing heat necessary for evaporating the nicotinic compound. A solution of a nicotine in an amount effective for its released vapors to satisfy the physiological needs for nicotine of the user, and volatile palatability enhancing agents in an amounts effective for their released vapors to impart a cigarette-like taste and aroma to the released vapor mixture are absorbed in the chip. The cigarette substitute is in custody in a case when not in use.

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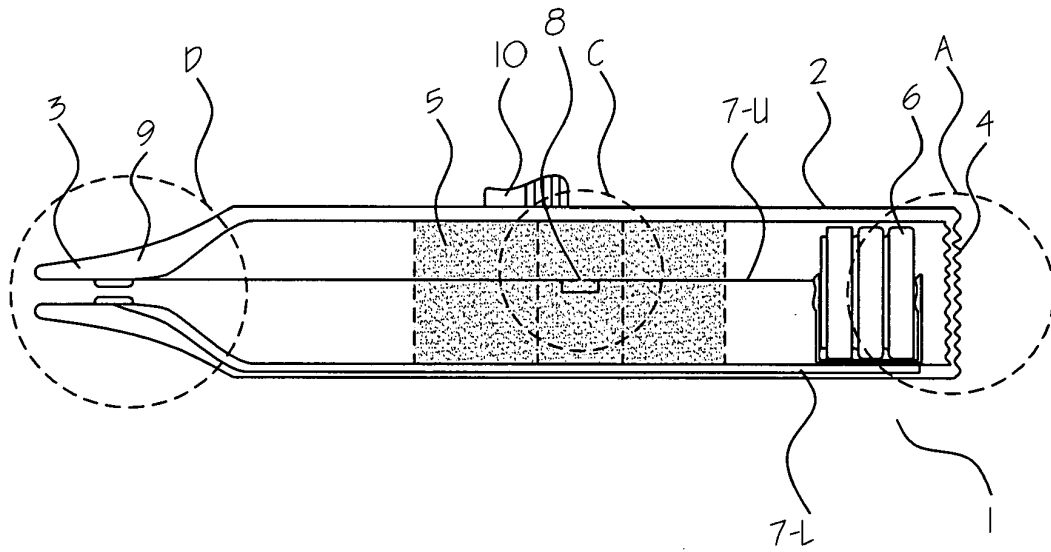


FIG. 1

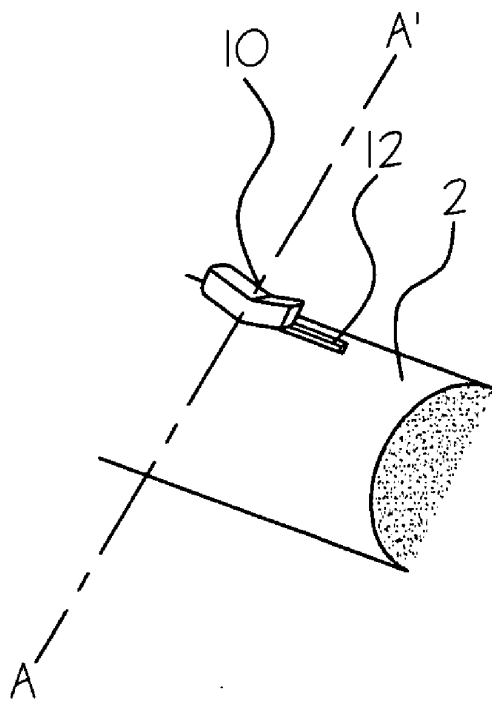


FIG. 3

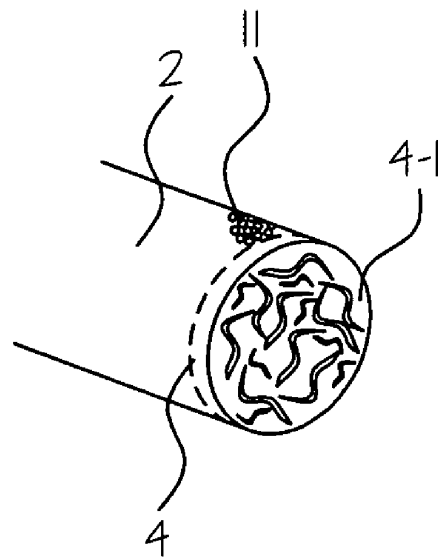


FIG. 2

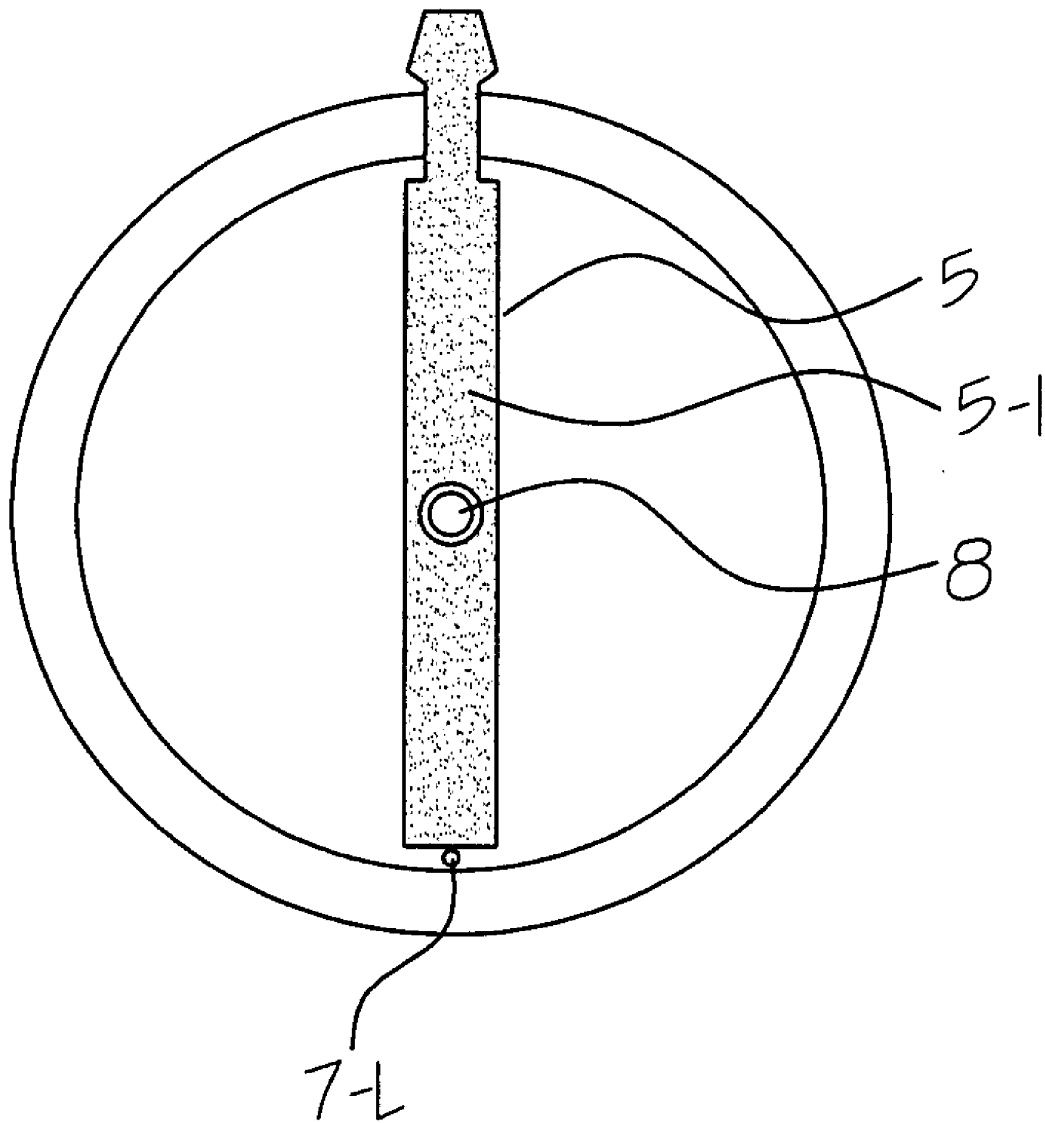


FIG. 4

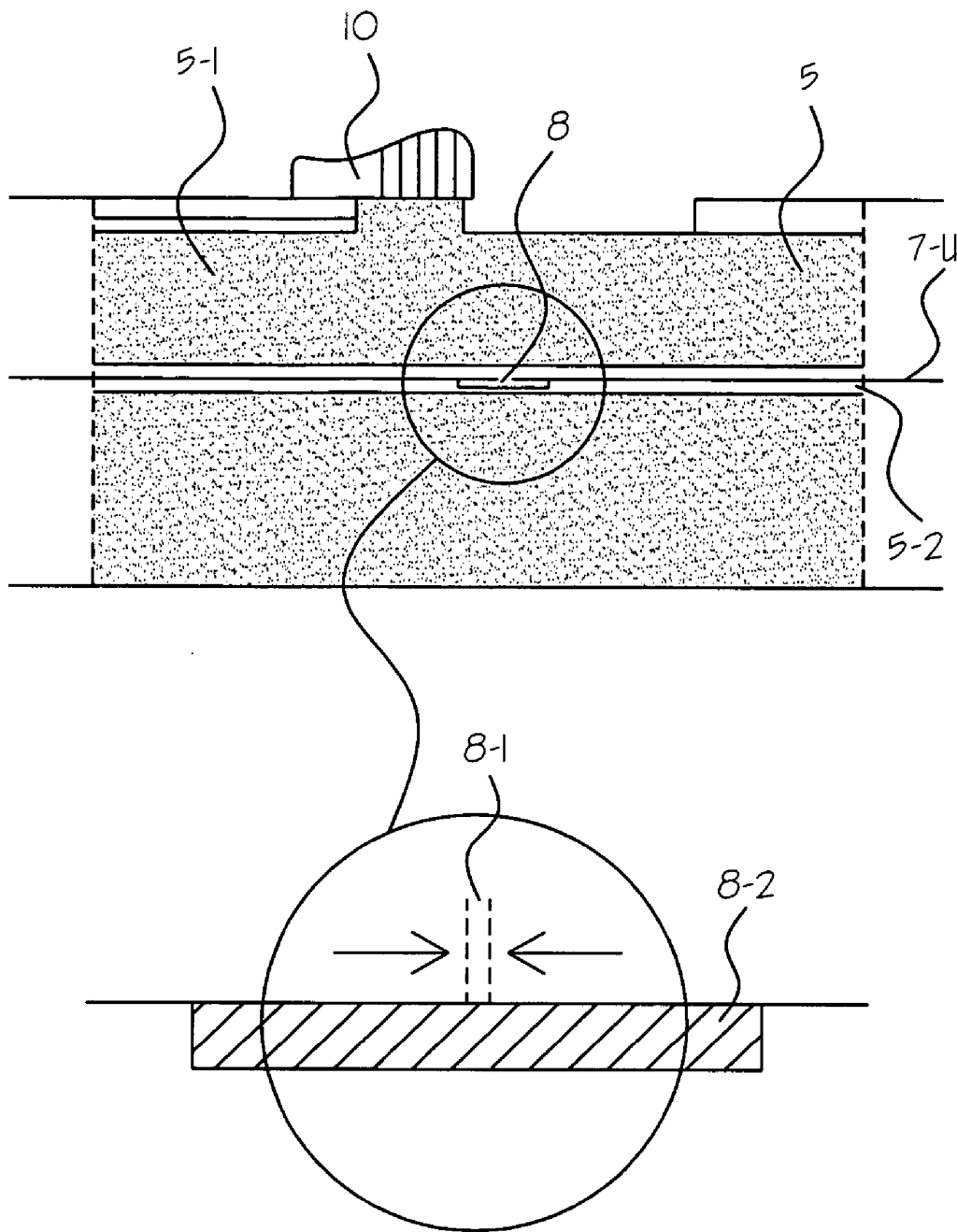


FIG. 5

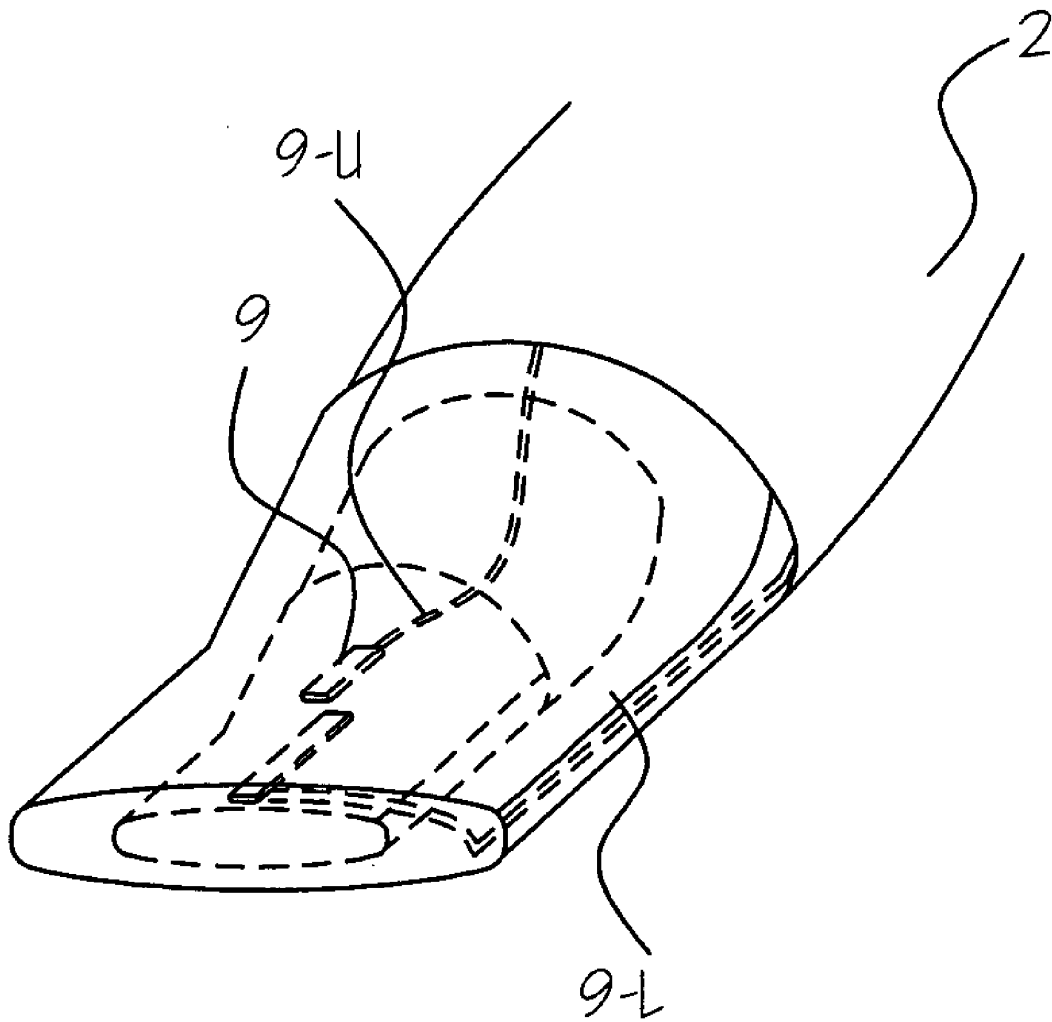


FIG. 6

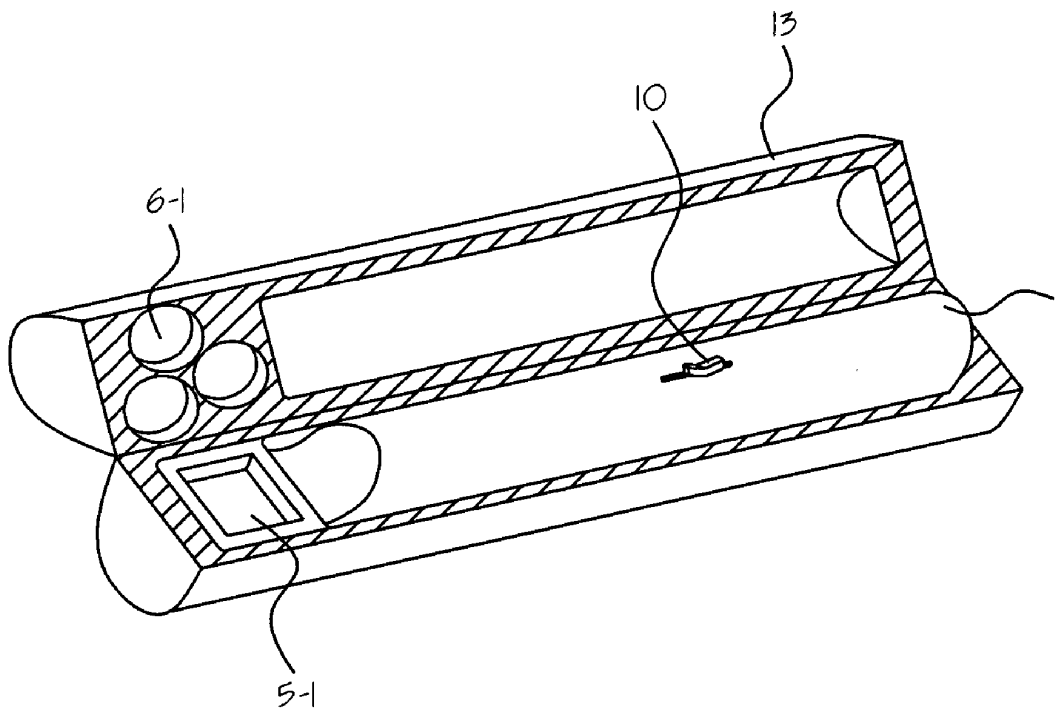


FIG. 7

## CIGARETTE SUBSTITUTE DEVICE

### FIELD OF THE INVENTION

[0001] This invention relates to a cigarette substitute device for spot-heating use and, more particularly, to such a device adapted to deliver to a user nicotine and volatile palatability enhancing agent's mixture having a cigarette-like taste and aroma.

### BACKGROUND OF THE INVENTION

[0002] The hazardous effect of second-hand smoke is known as the same as a direct smoke. Smoking is prohibited even on open public space such as U.S. Californian beaches. Such social pressures make habitual smokers unpleasant. Not only for the addictive effect of the Nicotine, there are several psychological factors, which are known to contribute to the habitual smoker's cigarette cravings. These include holding the cigarette, placing it between the user's lips, puffing on it, and experiencing the taste and aroma of the smoke. It is a purpose of the current application to provide a cigarette substitute device to minimize the hazardous of second-smoke, meanwhile satisfying the habitual smoker's cigarette cravings without breaking the public requirement.

### DESCRIPTION OF THE PRIOR ARTS

[0003] The growing public unacceptability of smoking cigarette, encouraged to provide cigarette substitute devices for use which simulate the look, feel and taste of combustible cigarettes and delivers nicotine vapor to the user through inhalation. U.S. Pat. Nos. 4,284,089 and 4,813,437 to Ray, and U.S. Pat. No. 4,793,366 to Hill illustrate devices which are consist of an elongated tube having the approximate dimensions of an ordinary cigarette and housing a porous polymer plug serving as a reservoir for a source of vaporizable nicotine. The nicotine vapors are delivered to the user's lungs by the air drawn through the device by suction supplied by the user. These devices have failed to gain wide acceptance as a cigarette substitute due to their inability to deliver sufficient and uniform amounts of nicotine to the user's lungs, an unpleasant taste, and an unsatisfactory shelf life. Most of these problems are due to the instability of the volatile liquid nicotine employed in these devices, which decompose in the presence of oxygen and very rapidly dissipate from the system. U.S. Pat. No. 5,893,371 to Rose et al., U.S. Pat. No. 6,041,789 to Bankert et al., and U.S. Pat. No. 6,041,790 to Smith et al. illustrate non-pyrolytic, non-Nicotine cigarette substitute devices which contains a nicotine-simulating vapor mixture having a cigarette-like taste and aroma. None of the prior arts provide cigarette substitute device satisfying all the requirement of smokers and non-smokers at the same time.

### SUMMARY OF THE INVENTION

[0004] The present invention overcomes the deficiencies of the above-described prior art non-heating cigarette substitute devices, by providing a cigarette substitute device for spot-heating use which, in response to suction supplied by a user, delivers to the user's lungs nicotine vapor mixture having a cigarette-like taste and aroma. The cigarette substitute device of the current application has a porous solid chip, an electric circuit is embedded therein for providing heat necessary for evaporating the nicotinic compound and turn on a light installed at the tip of the cigarette substitute

to simulate the burning of the cigarette. And a solution of a nicotine in an amount effective for its released vapors to satisfy the physiological needs for nicotine of the user, and volatile palatability enhancing agents in amounts effective for their released vapors to impart a cigarette-like taste and aroma to the released vapor mixture are absorbed in the chip. The chips contains Nicotine amount equivalent to about two weeks needs for average smokers who smokes a pack of 20 cigarettes a day. The cigarette substitute of the current application is in custody in a case, when not in use, to reserve the aroma of the cigarette in the substitute.

### BRIEF DESCRIPTION OF THE DRAWINGS

[0005] FIG. 1 is a side elevation in longitudinal section illustrating the preferred embodiment of the cigarette substitute device utilizing the features of the present invention.

[0006] FIG. 2 is an enlarged perspective view of the portion 'A' in FIG. 1, showing the front tip of the cigarette substitute device.

[0007] FIG. 3 is an enlarged perspective view of the portion 'B' in FIG. 1, showing the middle part of the cigarette substitute device of the current application.

[0008] FIG. 4 is a cross-sectional view of the portion 'B' along the line "A-A" in FIG. 1.

[0009] FIG. 5 is an enlarged cross-sectional view of the portion 'C' in FIG. 1, showing the electric shorting connector embedded in the porous chip.

[0010] FIG. 6 is an enlarged perspective view of the portion 'D' in FIG. 1, showing the mouth tip of the cigarette substitute device.

[0011] FIG. 7 is a schematic drawing of the cigarette substitute in a holding case.

### DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0012] FIG. 1 is a side elevation in longitudinal section illustrating the preferred embodiment of the cigarette substitute device (1) utilizing the features of the current application. The cigarette substitute device (1) of the present invention is comprised of a housing (2) in the form of an elongated tube, a mouth tip (3), an LED (Light Emitting Diode) (4), a porous chip (5), three 3 Volt mini-battiest (6) with 7 mm diameter, two electric wires (7-U) and (7-L), an electric shorting connector (8), an on/off electric connector (9), and a sliding knob (10). The housing (2) is preferably manufactured of a stiff plastic sheet with a diameter, length and weight which approximate the size of a conventional combustible cigarette, and with the appropriate color and texture, a white paper like look with proper commercial trade mark on it, to present the same appearance as a conventional combustible cigarette.

[0013] FIG. 2 is an enlarged perspective view of the portion 'A' in FIG. 1, showing the front tip of the cigarette substitute device (1). The tip is comprised of a red color LED (4), whose front face is partially covered with white gray color wrinkles (4-1), resembling cigarette fire covered with ash. Just behind the LED (4), a porous hemi-circle (11) for air inlet is developed.

[0014] FIG. 3 is an enlarged perspective view of the portion 'B' in FIG. 1, showing the middle part of the

cigarette substitute device (1) of the current application (1). A groove (12) is developed for sliding of the knob (10). And FIG. 4 is a cross-sectional view of the portion 'B' along the line "A-A" in FIG. 1. The porous chip (5) is manufactured as a thin plate of 3 mm thickness to allow the evaporated Nicotine mixture come out of the chip (5) easily.

[0015] FIG. 5 is an enlarged cross-sectional view of the portion 'C' in FIG. 1, showing the electric shortening connector (8) embedded in the porous chip (5). An electric heating coil (8-3) may be installed instead of the shorting connector. Mixtures of Nicotine and volatile palatability enhancing agents are absorbed in the pores (5-1) of the porous chip (5). A cylindrical hole (5-2) is developed at the center of the chip (5) throughout the whole length of the chip (5) for allowing the chip (5) move front and back according to the sliding knob (10)' movement. This porous chip (5) may be manufactured as a slim plate or a rod with a porous polymeric material, preferably in the form of polymeric fibers, and having absorbed therein the volatile liquid composition of mixture of nicotine and volatile palatability enhancing agents. Disposed within the porous chip (5) is an electric shortening connector (8). This electric shortening connector is comprised of two electric wires (7-U) whose ends are spaced 0.01 mm part (8-1) on a non-conductive ceramic support (8-2) plate of 1.0 mm thickness, 1.0 mm width and 5 mm length. If an electric heating coil (8-3) is installed inspite of the electric shortening (8) connector, the ceramic support may not be necessary.

[0016] FIG. 6 is an enlarged perspective view of the portion 'D' in FIG. 1, showing the lipping tip (3) of the cigarette substitute device (1). An on/off electric connector (9) is located between the two lips of the lipping tip (3). The on/off electric connector (9) is comprised of two metal chips of (9-U) and (9-L) which are connected to the electric wires (7-U) and (7-L), respectively)

[0017] The cigarette substitute device (1) of the current application operates as follows. Aqueous mixture of Nicotine and volatile palatability enhancing agents are absorbed in the pores of the porous chip (5). The porous chip (5) is made of porous polymer.

[0018] When a habitual smoker put the cigarette substitute device (1) of the current application between his lips and presses the lipping tip (3) of the device, the two metal plates (9-U) and (9-L) of the on/off electric connector (9) is connected. Then the electric circuit is connected through the electric wires (7-U) and (7-L), three batteries (6), and the red color LED (4). However, as described before, the upper electric wire (7-U) is a 0.01 mm spaced apart. As the electric circuit is connected, an electric fire sparks on this spot (8). At the same time the red color LED (4) blinks as the spark takes place. Then the red color of the LED (4) combined with the white gray color wrinkles (4-1) resembles a smoking fire under an ash.

[0019] The heat from the spark evaporates the mixture of the Nicotine and volatile palatability enhancing agents out of

the porous chip (5) from the pores (5-1) therein. As the smoker puffs, the evaporated mixture is delivered to the smokers mouth by the air stream which comes from the out side through the porous hemi circle (11) developed just behind the red color LED (4). When a smoker purchases the cigarette substitute device (1) from a market, the porous chip (5) is placed at the most rearward of the device. Therefore, the nicotine mixtures absorbed at the most front side of the porous chip evaporates and is consumed first. As the Nicotine mixture is consumed, slide the knob (10) to the front side of the device (2) to make the unevaporized Nicotine mixture with the sparking spot (8). FIG. 7 is a schematic drawing of the cigarette substitute (1) in a holding case (13). The holding case is made of, including but not limited to, a metal, plastic, and wood. Places for spare porous chips (5-1) and spare batteries (6-1).

[0020] By utilizing the device of the current application, the smoker can satisfy his or her cigarette carvings without facing the public resistance.

What is claimed is:

1. A cigarette substitute device for spot-heating use is comprised of; a) an elongated plastic tube defining a passageway for air drawn through said device; b) a porous polymeric chip in a plate shape slidably disposed within the tube and absorbing the mixture of Nicotine and volatile palatability enhancing agents, c) a sliding knob connected to the porous plastic chip in a plate shape to slide the plate along the groove developed on the plastic tube d) a red color LED (Light Emitting Diode) positioned at the front of the tube, e) three 3V mini batteries connected in series, f) a mouth tip made of transparent flexible plastic and holding two metal plates of an on/off electric connector on each upper and lower portion of the flexible mouth tip, and g) an electric wire connected to the LED, batteries, the metal plates of the on/off electric wire and forming a shortening circuit in the porous polymeric chip.

2. The cigarette substitute device of claim 1, wherein the porous polymer chip is in a cylinder form of 3 mm in diameter.

3. A cigarette substitute device for spot-heating use is comprised of; a) an elongated plastic tube defining a passageway for air drawn through said device; b) a porous polymeric chip in a plate shape slidably disposed within the tube and absorbing the mixture of Nicotine and volatile palatability enhancing agents, c) a sliding knob connected to the porous plastic chip in a plate shape to slide the plate along the groove developed on the plastic tube d) a red color LED (Light Emitting Diode) positioned at the front of the tube, e) three 3V mini batteries connected in series, f) a mouth tip made of transparent flexible plastic and holding two metal plates of an on/off electric connector on each upper and lower portion of the flexible mouth tip, and g) an electric wire connected to the LED, batteries, the metal plates of the on/off electric wire and a heating coil in the porous polymeric chip.

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