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(54) **ELECTRONIC ATOMIZATION APPARATUS AND METHOD THEREFOR**

(57) An electronic atomization apparatus (100) and a method therefor. The electronic atomization apparatus (100) comprises an air inlet (23), an air outlet (12), and an airflow channel (R1) extending from the air inlet (23) to the air outlet (12); and an atomization assembly (11), which is used for atomizing a liquid matrix to generate an aerosol, air flowing into the airflow channel (R1) by means of the air inlet (23) and flowing out of the air outlet (12) after flowing through the atomization assembly (11); and a sensor (24), which is used for sensing the air pressure in the airflow channel (R1) so as to output a feature value. The electronic atomization apparatus (100) is controlled to be in an unlocked state according to the result of comparison between the feature value outputted by the sensor (24) or a parameter value corresponding to the feature value and a preset threshold. The feature value outputted by the sensor (24) or the parameter value corresponding to the feature value is compared with the preset threshold, so as to control the electronic atomization apparatus (100) to unlock, thereby allowing for nor-

mal vaping. The electronic atomization apparatus (100) can be prevented from being mistakenly started up for operation, thereby protecting children.

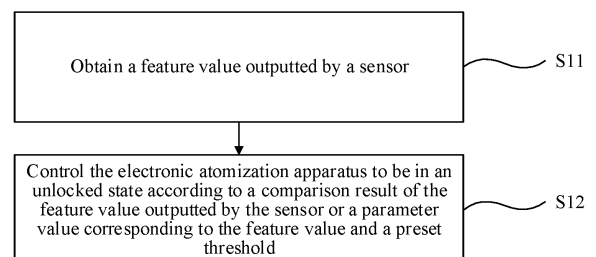


FIG. 2

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Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to Chinese Patent Application No. 202210100306.9, entitled "ELECTRONIC ATOMIZATION APPARATUS AND METHOD THEREFOR" and filed with the China National Intellectual Property Administration on January 27, 2022, which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] This application relates to the field of cigarette device technologies, and in particular, to an electronic atomization apparatus and a method therefor.

BACKGROUND

[0003] Generally, an electronic atomization apparatus is not provided with a children protection function, if the electronic atomization apparatus is mistakenly started up for operation, an aerosol generated through atomization may be inhaled by children and harm physical and mental health of the children. In addition, the children protection function has been incorporated into related laws, regulations, and standards in different countries or regions.

SUMMARY

[0004] This application provides an electronic atomization apparatus and a method therefor, to implement a children protection function in the electronic atomization apparatus.

[0005] According to an aspect of this application, an electronic atomization apparatus is provided, including:

an air inlet, an air outlet, and an airflow channel extending from the air inlet to the air outlet;
an atomization assembly, configured to atomize a liquid substrate to generate an aerosol, where air flows into the airflow channel through the air inlet and flows out from the air outlet after flowing through the atomization assembly;
a sensor, configured to sense an airflow change in the airflow channel to output a feature value; and
a controller, configured to obtain the feature value outputted by the sensor, and control the electronic atomization apparatus to be in an unlocked state according to a comparison result of the feature value outputted by the sensor or a parameter value derived from the feature value and a preset threshold.

[0006] According to another aspect of this application, a control method for an electronic atomization apparatus is provided, where the electronic atomization apparatus includes:

an air inlet, an air outlet, and an airflow channel extending from the air inlet to the air outlet;
an atomization assembly, configured to atomize a liquid substrate to generate an aerosol, where air flows into the airflow channel through the air inlet and flows out from the air outlet after flowing through the atomization assembly; and
a sensor, configured to sense an airflow change in the airflow channel to output a feature value; and
the control method includes:
obtaining the feature value outputted by the sensor; and
controlling the electronic atomization apparatus to be in an unlocked state according to a comparison result of the feature value outputted by the sensor or a parameter value derived from the feature value and a preset threshold.

[0007] According to another aspect of this application, an operating method for an electronic atomization apparatus is further provided, where the electronic atomization apparatus includes:

an air inlet, an air outlet, and an airflow channel extending from the air inlet to the air outlet;
an atomization assembly, configured to atomize a liquid substrate to generate an aerosol, where air flows into the airflow channel through the air inlet and flows out from the air outlet after flowing through the atomization assembly; and
a sensor, configured to sense an airflow change in the airflow channel to output a feature value; and
the operating method includes:
blocking at least a part of the air inlet;
inhaling the electronic atomization apparatus, to cause the sensor to sense the airflow change in the airflow channel and output the feature value; and
obtaining the feature value outputted by the sensor through a controller, where the controller controls the electronic atomization apparatus to be in an unlocked state according to a comparison result of the feature value outputted by the sensor or a parameter value derived from the feature value and a preset threshold.

[0008] According to the electronic atomization apparatus and the method therefor provided in this application, the feature value outputted by the sensor or the parameter value derived from the feature value is compared with the preset threshold, to control the electronic atomization apparatus to be unlocked, so as to implement normal inhalation. In this way, the electronic atomization apparatus can be prevented from being mistakenly started up for operation, thereby protecting children.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] One or more embodiments are exemplarily de-

scribed with reference to the corresponding figures in the accompanying drawings, and the description does not constitute a limitation to the embodiments. Elements in the accompanying drawings that have same reference numerals are represented as similar elements, and unless otherwise particularly stated, the figures in the accompanying drawings are not drawn to scale.

FIG. 1 is a schematic diagram of an electronic atomization apparatus according to an implementation of this application;

FIG. 2 is a schematic diagram of a control method for an electronic atomization apparatus according to an implementation of this application;

FIG. 3 is a schematic diagram of an operating method for an electronic atomization apparatus according to an implementation of this application; and

FIG. 4 is a schematic diagram of an unlocking and locking process of an electronic atomization apparatus according to an implementation of this application.

DETAILED DESCRIPTION

[0010] For ease of understanding of this application, this application is described in further detail below with reference to the accompanying drawings and specific implementations. It should be noted that, when an element is expressed as "being fixed to" another element, the element may be directly on the another element, or one or more intermediate elements may exist between the element and the another element. When an element is expressed as "being connected to" another element, the element may be directly connected to the another element, or one or more intermediate elements may exist between the element and the another element. The terms "upper", "lower", "left", "right", "inner", "outer", and similar expressions used in this specification are merely used for an illustrative purpose.

[0011] Unless otherwise defined, meanings of all technical and scientific terms used in this specification are the same as those usually understood by a person skilled in the technical field to which this application belongs. In this application, the terms used in this specification of this application are merely intended to describe objectives of the specific implementations, but are not intended to limit this application. The term "and/or" used in this specification includes any or all combinations of one or more related listed items.

[0012] FIG. 1 is a schematic diagram of an electronic atomization apparatus according to an example of this application.

[0013] As shown in FIG. 1, the electronic atomization apparatus 100 includes an atomizer 10 (first part) and a power supply assembly 20 (second part), where the atomizer 10 and the power supply assembly 20 are integrally formed. In another example, it is feasible that the atomizer 10 is detachable connected to the power supply

assembly 20.

[0014] The atomizer 10 includes a liquid storage cavity (not shown) configured to store an aerosol-forming substrate and an atomization assembly 11, where under an action of power provided by the power supply assembly 20, the atomization assembly 11 atomizes the aerosol-forming substrate to form an inhalable aerosol.

[0015] The aerosol-forming substrate is a liquid aerosol-forming substrate (that is, a liquid substrate).

[0016] The atomization assembly 11 includes a heating element to heat the liquid aerosol-forming substrate to form the inhalable aerosol. The heating element may be a resistive heating element, an electromagnetic induction heating element, or an infrared radiation heating element. In another example, the atomization assembly 11 includes an ultrasonic atomization sheet configured to generate high-frequency oscillation to ultrasonically atomize the liquid aerosol-forming substrate to form the inhalable aerosol.

[0017] The atomization assembly 11 further includes a liquid transmission unit. The liquid transmission unit may be, for example, a cotton fiber, a metal fiber, a ceramic fiber, a glass fiber, or a porous ceramic, which can transmit the liquid aerosol-forming substrate stored in the liquid storage cavity to the heating element or the ultrasonic atomization sheet through a capillary effect.

[0018] The power supply assembly 20 includes a battery cell 21 and a circuit 22.

[0019] The battery cell 21 provides power for operating the electronic atomization apparatus 100. The battery cell 21 may be a rechargeable battery cell or a disposable battery cell.

[0020] The circuit 22 can control overall operations of the electronic atomization apparatus 100. The circuit 22 not only controls operations of the battery cell 21 and the atomization assembly 11, but also controls operations of other elements in the electronic atomization apparatus 100.

[0021] The air outlet 12 is provided at an upper end of the electronic atomization apparatus 100, the air inlet 23 is provided at a lower end of the electronic atomization apparatus 100, and the airflow channel R1 (shown by a dotted arrow in the figure) extends from the air inlet 23 to the air outlet 12. Air flows into the airflow channel R1 through the air inlet 12 and flows out from the air outlet 23 after flowing through the atomization assembly 11. Positions of the air inlet 23 and the air outlet 12 are not limited to the manner shown in FIG. 1, and in another example, both the air inlet 23 and the air outlet 12 may be provided on the atomizer 10.

[0022] In a preferred implementation, the atomization assembly 11 defines a partial surface of the airflow channel R1. For example, an inner hollow portion of a tubular atomization assembly 11 defines a part of the airflow channel R1; or a surface of a plate-like atomization assembly 11 defines a part of the airflow channel R1.

[0023] A sensor 24 is configured to sense an airflow change in the airflow channel R1 to output a feature val-

ue. The feature value includes a feature value used for representing air pressure, an air pressure change, a flow, or a flow change, and the feature value may be an electrical signal such as a voltage signal, a resistance signal, or a capacitance signal. The sensor 24 may be arranged in the airflow channel R1 or may be in fluid communication with the airflow channel R1. In a preferred implementation, the sensor 24 is arranged in the power supply assembly and is located upstream of the atomization assembly 11 along an airflow direction. Preferably, the sensor 24 is an air pressure sensor.

[0024] FIG. 2 is a schematic diagram of a control method for an electronic atomization apparatus according to an example of this application, and the method is applied to a controller (not shown). The controller is arranged in the power supply assembly, and the controller may be a part of the circuit 22 or may be independent of the circuit 22. In a preferred implementation, the controller includes a microcontroller unit (MCU).

[0025] As shown in FIG. 2, the control method for an electronic atomization apparatus includes:

Step S11. Obtaining the feature value outputted by the sensor.

Step S12. Controlling the electronic atomization apparatus to be in an unlocked state according to a comparison result of the feature value outputted by the sensor or a parameter value derived from the feature value and a preset threshold.

[0026] When the electronic atomization apparatus 100 is in a locked state, even if an inhalation action or an inhalation instruction from a user is detected, the electronic atomization apparatus 100 cannot start atomization to protect children.

[0027] When the electronic atomization apparatus 100 is in the unlocked state, once the inhalation action or the inhalation instruction from the user is detected, the electronic atomization apparatus can normally start up the atomization assembly 11 for atomization.

[0028] For whether the electronic atomization apparatus 100 is inhaled, a microphone or an airflow sensor similar to a microphone is generally arranged in the electronic atomization apparatus to detect the airflow change in the airflow channel, so as to determine whether the electronic atomization apparatus is inhaled. Certainly, this application is not limited to this situation, and for example, a button manner is also feasible.

[0029] In Step S11, an I/O interface of the controller may be directly electrically connected to the sensor 24, and the feature value outputted by the sensor 24 may be obtained by opening the I/O interface.

[0030] In a preferred implementation, whether the electronic atomization apparatus is inhaled is detected; and

[0031] the feature value outputted by the sensor 24 is obtained in a case that the electronic atomization apparatus is inhaled.

[0032] In this implementation, whether the electronic atomization apparatus 100 is inhaled is detected, and the feature value outputted by the sensor 24 is obtained by opening the I/O interface of the controller, or the sensor 24 is controlled to be powered to obtain the feature value outputted by the sensor 24. In this way, a problem of high power consumption because the sensor 24 is always in an operating state can be prevented.

[0033] Further, the controller may obtain the feature value outputted by the sensor 24 in a case that the air inlet 23 is at least partially blocked and the electronic atomization apparatus 100 is inhaled. Because the air inlet 23 is at least partially blocked, if a user inhales the electronic atomization apparatus, air pressure in the airflow channel rises quickly to reach the preset threshold, facilitating unlocking of the electronic atomization apparatus 100. A manner in which the air inlet 23 is blocked is not limited herein, and the air inlet 23 may be blocked by a finger of the user or may be blocked a mechanism or component arranged in the electronic atomization apparatus 100.

[0034] In a preferred implementation, the control method further includes:

detecting whether the electronic atomization apparatus is in a locked state; and
performing the step of obtaining the feature value outputted by the sensor if the electronic atomization apparatus is in the locked state.

[0035] In this implementation, whether the electronic atomization apparatus 100 is in the locked state is detected, so that Step S11 to Step S13 performed in the unlocked state may be prevented, thereby simplifying a control procedure of the electronic atomization apparatus 100.

[0036] In Step S12, the controller controls the electronic atomization apparatus 100 to be in the unlocked state according to the comparison result of the feature value or the parameter value derived from the feature value and the preset threshold (that is, a comparison result of the feature value and the preset threshold or a comparison result of the parameter value corresponding to the feature value and the preset threshold). The parameter value derived from the feature value is determined by the feature value.

[0037] For example, the controller may determine an air pressure value in the airflow channel R1 and another parameter value similar to the air pressure value (for example, an air pressure change amount value or an air pressure change rate value) according to the feature value outputted by the sensor 24, and determine whether to control the electronic atomization apparatus 100 to be in the unlocked state according to a comparison result of the air pressure value and a preset air pressure threshold (or the another parameter value and a preset parameter threshold). The controller may alternatively directly determine whether to control the electronic atomization

apparatus 100 to be in the unlocked state according to a comparison result of the feature value outputted by the sensor 24 and a preset feature threshold.

[0038] The preset threshold may be customized by the user, and the preset threshold may be an air pressure value that can be hardly reached when a child inhales the airflow channel R1 or an air pressure value that can only be reached when the air inlet 23 is at least partially blocked.

[0039] In a preferred implementation, the control method further includes:

determining an air pressure value in the airflow channel according to the feature value outputted by the sensor;
comparing the air pressure value with a preset air pressure threshold; and
controlling the electronic atomization apparatus to be in the unlocked state if the air pressure value is greater than or equal to the preset air pressure threshold.

[0040] In this implementation, the air pressure value in the airflow channel R1 is determined according to the feature value outputted by the sensor 24. For example, a corresponding air pressure value is obtained through table lookup according to a resistance value outputted by the sensor 24, the determined air pressure value is compared with the preset air pressure threshold to determine whether the air pressure in the airflow channel R1 reaches the preset air pressure threshold, and the electronic atomization apparatus 100 is further controlled to be in the unlocked state.

[0041] In a preferred implementation, the control method further includes:

comparing the feature value outputted by the sensor with a preset feature threshold; and
controlling the electronic atomization apparatus to be in the unlocked state if the feature value outputted by the sensor is greater than or equal to the preset feature threshold.

[0042] In this implementation, the feature value outputted by the sensor 24 is directly compared with the preset feature threshold. For example, the resistance value outputted by the sensor 24 is compared with a preset resistance threshold, and the electronic atomization apparatus 100 is further controlled to be in the unlocked state.

[0043] It should be noted that, the sensor 24 may output a plurality of feature values, and the largest feature value (or another suitable feature value) in the plurality of feature values may be selected for determination; or the plurality of feature values are compared with a plurality of preset thresholds (the preset air pressure threshold, the preset feature threshold, and the like) in a one-to-one correspondence manner.

[0044] Alternatively, a plurality of sensors 24 may be

arranged. For example, whether the air pressure in the airflow channel R1 reaches a first preset threshold (the preset air pressure threshold, the preset feature threshold, or the like) is determined according to a feature value outputted by a sensor 24; and whether the air pressure in the airflow channel R1 reaches a second preset threshold is then determined according to a feature value outputted by another sensor 24 (the feature value outputted by the another sensor 24 may be obtained at an interval of a period of time after the feature value outputted by the sensor 24 is obtained), where the second preset threshold (the preset air pressure threshold, the preset feature threshold, or the like) may be greater than the first preset threshold. In this way, in a case that the first preset threshold and the second preset threshold are both reached, the electronic atomization apparatus 100 is controlled to be in the unlocked state.

[0045] In a preferred implementation, the control method further includes:

determining a change rate or a change amount of air pressure in the airflow channel according to the feature value outputted by the sensor;
comparing the change rate or the change amount of the air pressure with a preset change threshold; and
controlling the electronic atomization apparatus to be in the unlocked state if the change rate or the change amount of the air pressure is greater than or equal to the preset change threshold.

[0046] In this implementation, whether the change rate or the change amount of the air pressure in the airflow channel R1 reaches the preset change threshold is determined according to the feature value outputted by the sensor 24. For example, the controller obtains feature values k_1 to k_n outputted by the sensor 24, obtains feature values k_1 to k_m (m is less than n) outputted by the sensor 24 through filtering, and determines that the change amount of the air pressure in the airflow channel R1 reaches a preset change amount threshold is $(k_m - k_1)$ is greater than or equal to the preset change amount threshold; or the controller determines that the change rate in the airflow channel R1 reaches a preset change rate threshold if $(k_m - k_1)/t$ is greater than or equal to the preset change rate threshold, where t is sampling time of k_1 to k_m . Similar to the foregoing description, corresponding air pressure values such as P_1 to P_m in the airflow channel R1 may be first determined according to the feature values k_1 to k_m outputted by the sensor 24, and a relationship between a change amount $(P_m - P_1)$ or a change rate $(P_m - P_1)/t$ and the preset change threshold is then determined. In an alternative implementation, whether the change rate or the change amount of the air pressure in the airflow channel R1 reaches the preset change threshold may be determined according to a currently obtained feature value (for example, k_t) outputted by the sensor 24 and a preset feature value (for example, k_0) of the sensor 24, that is, a relationship between

$(kt+k_0)$ or $(kt-k_0)/t$ and the preset change threshold. Alternatively, k_0 may be a feature value outputted by the sensor 24 in previous sampling (for example, a feature value obtained through sampling when the electronic atomization apparatus is locked). Once it is determined that the change rate or the change amount in the airflow channel R1 reaches the preset change threshold, the electronic atomization apparatus 100 is controlled to be in the unlocked state. In this case, if it is detected that the electronic atomization apparatus 100 is inhaled, the atomization assembly 11 may be normally started up for atomization.

[0047] It should be noted that, in the foregoing comparison situations, the electronic atomization apparatus may be alternatively controlled to be in the unlocked state when the value is less than or equal to the preset threshold (the preset air pressure threshold, the preset feature threshold, the preset change threshold, or the like).

[0048] It should be further noted that, comparison of the air pressure value and the preset air pressure threshold, comparison of the feature value and the preset feature threshold, comparison of the change rate and the preset change rate threshold, and comparison of the change amount and the preset change amount threshold may be implemented through a comparator inside the MCU; or may be implemented through a comparison circuit independent of the MCU.

[0049] In another preferred implementation, the control method further includes:

detecting whether the electronic atomization apparatus is inhaled within preset time; and
controlling the electronic atomization apparatus to be in a locked state if the electronic atomization apparatus is not inhaled within the preset time.

[0050] Generally, the preset time may be 5 minutes, 10 minutes, or the like, and the preset time specifically may be set by the user.

[0051] In this way, when the electronic atomization apparatus 100 is not inhaled, the electronic atomization apparatus 100 is controlled to be in the locked state in time. Therefore, children can be further protected.

[0052] FIG. 3 is a schematic diagram of an operating method for an electronic atomization apparatus according to an example of this application.

[0053] As shown in FIG. 3, the operating method includes:

Step S21. Blocking at least a part of the air inlet.

Step S23. Inhaling the electronic atomization apparatus, to cause the sensor to sense the air pressure in the airflow channel and output the feature value; obtain the feature value outputted by the sensor through a controller; and controlling the electronic atomization apparatus to be in an unlocked state according to a comparison result of the feature value outputted by the sensor or a parameter value derived

from the feature value and a preset threshold.

[0054] In a preferred implementation, the part of the air inlet is blocked by a part of a body of a user or adjusting a mechanism of the electronic atomization apparatus. For example, the part of the air inlet 23 is blocked by a finger or a palm. This operating manner is easy and convenient.

[0055] Due to children's thinking and the simplicity of the operations, it is generally difficult for children to consciously block the air inlet 23 to unlock and inhale the electronic atomization apparatus 100. Therefore, this operating manner can protect children.

[0056] The following describes an unlocking and unlocking process of the electronic atomization apparatus 100 with reference to FIG. 1 and FIG. 4:

[0057] Whether the electronic atomization apparatus 100 is in a locked state is first determined (Step S31).

[0058] If the electronic atomization apparatus 100 is in the locked state, a user blocks at least a part of the air inlet 23 through a finger of the user, and then inhales the electronic atomization apparatus 100, which may be one or more puffs (Step S32). The controller then obtains the feature value outputted by the sensor 24; and determines whether the air pressure in the airflow channel R1 reaches the preset threshold according to the feature value outputted by the sensor 24 (Step S33 and Step S34).

[0059] If the air pressure in the airflow channel R1 reaches the preset threshold, the controller controls the electronic atomization apparatus 100 to be in an unlocked state (Step S35). Otherwise, the controller obtains the feature value outputted by the sensor 24; and determines whether the air pressure in the airflow channel R1 reaches the preset threshold according to the feature value outputted by the sensor 24.

[0060] If the electronic atomization apparatus 100 is in an unlocked state, the controller determines whether the electronic atomization apparatus 100 is inhaled within preset time (Step 36).

[0061] If the electronic atomization apparatus 100 is not inhaled within the preset time, the controller controls the electronic atomization apparatus 100 to be in a locked state (Step S37); otherwise, the controller continues to perform Step S36.

[0062] In another example, the controller may be further configured to read program code for controlling an electronic atomization apparatus stored in a storage medium and execute the program code, to implement the steps of the control method for an electronic atomization apparatus.

[0063] The storage medium may be a part of the controller or may be independent of the controller.

[0064] It should be noted that, the specification of this application and the accompanying drawings thereof illustrate preferred embodiments of this application. However, this application can be implemented in various different forms, and is not limited to the embodiments described in this specification. These embodiments are not

intended to be an additional limitation on the content of this application, and are described for the purpose of providing a more thorough and comprehensive understanding of the content disclosed in this application. Moreover, the above technical features are further combined to form various embodiments not listed above, and all such embodiments shall be construed as falling within the scope of the specification of this application. Further, a person of ordinary skill in the art may make improvements or modifications according to the foregoing description, and all the improvements and modifications shall fall within the protection scope of the appended claims of this application.

Claims

1. An electronic atomization apparatus, comprising:

an air inlet, an air outlet, and an airflow channel extending from the air inlet to the air outlet;
an atomization assembly, configured to atomize a liquid substrate to generate an aerosol, wherein air flows into the airflow channel through the air inlet and flows out from the air outlet after flowing through the atomization assembly;
a sensor, configured to sense an airflow change in the airflow channel to output a feature value; and
a controller, configured to obtain the feature value outputted by the sensor, and control the electronic atomization apparatus to be in an unlocked state according to a comparison result of the feature value outputted by the sensor or a parameter value derived from the feature value and a preset threshold.

2. The electronic atomization apparatus according to claim 1, wherein the atomization assembly defines a partial surface of the airflow channel.

3. The electronic atomization apparatus according to claim 1, wherein the sensor is arranged upstream of the atomization assembly along an airflow direction.

4. The electronic atomization apparatus according to claim 1, wherein the electronic atomization apparatus comprises a first part and a second part detachably connected to the first part; and the atomization assembly is arranged in the first part, and the sensor and the controller are both arranged in the second part.

5. The electronic atomization apparatus according to claim 4, wherein the air outlet is provided in the first part, and the air inlet is provided in the second part.

6. A control method for an electronic atomization ap-

paratus, wherein the electronic atomization apparatus comprises:

an air inlet, an air outlet, and an airflow channel extending from the air inlet to the air outlet;
an atomization assembly, configured to atomize a liquid substrate to generate an aerosol, wherein air flows into the airflow channel through the air inlet and flows out from the air outlet after flowing through the atomization assembly; and
a sensor, configured to sense airflow changes in the airflow channel to output a feature value; and
the control method comprises:

obtaining the feature value outputted by the sensor; and
controlling the electronic atomization apparatus to be in an unlocked state according to a comparison result of the feature value outputted by the sensor or a parameter value derived from the feature value and a preset threshold.

7. The control method according to claim 6, wherein the control method further comprises:

detecting whether the electronic atomization apparatus is in a locked state; and
performing the step of obtaining the feature value outputted by the sensor if the electronic atomization apparatus is in the locked state.

8. The control method according to claim 6, wherein the obtaining the feature value outputted by the sensor comprises:

detecting whether the electronic atomization apparatus is inhaled; and
obtaining the feature value outputted by the sensor in a case that the electronic atomization apparatus is inhaled.

9. The control method according to claim 6, wherein the control method further comprises:

determining an air pressure value in the airflow channel according to the feature value outputted by the sensor;
comparing the air pressure value with a preset air pressure threshold; and
controlling the electronic atomization apparatus to be in the unlocked state if the air pressure value is greater than or equal to the preset air pressure threshold.

10. The control method according to claim 6, wherein the control method further comprises:

comparing the feature value outputted by the sensor with a preset feature threshold; and controlling the electronic atomization apparatus to be in the unlocked state if the feature value outputted by the sensor is greater than or equal to the preset feature threshold. 5

11. The control method according to claim 10, wherein the feature value comprises a feature value used for representing air pressure, an air pressure change, a flow, or a flow change. 10

12. The control method according to claim 6, wherein the control method further comprises: 15

determining a change rate or a change amount of air pressure in the airflow channel according to the feature value outputted by the sensor; comparing the change rate or the change amount of the air pressure with a preset change threshold; and 20
controlling the electronic atomization apparatus to be in the unlocked state if the change rate or the change amount of the air pressure is greater than or equal to the preset change threshold. 25

13. The control method according to claim 6, wherein the control method further comprises:

detecting whether the electronic atomization apparatus is inhaled within preset time; and 30
controlling the electronic atomization apparatus to be in a locked state if the electronic atomization apparatus is not inhaled within the preset time. 35

14. An operating method for an electronic atomization apparatus, wherein the electronic atomization apparatus comprises: 40

an air inlet, an air outlet, and an airflow channel extending from the air inlet to the air outlet; an atomization assembly, configured to atomize a liquid substrate to generate an aerosol, wherein air flows into the airflow channel through the air inlet and flows out from the air outlet after flowing through the atomization assembly; and 45
a sensor, configured to sense an airflow change in the airflow channel to output a feature value; and 50
the operating method comprises:

blocking at least a part of the air inlet; inhaling the electronic atomization apparatus, to cause the sensor to sense the airflow change in the airflow channel and output the feature value; 55
obtaining the feature value outputted by the

sensor through a controller; and controlling the electronic atomization apparatus to be in an unlocked state through the controller according to a comparison result of the feature value outputted by the sensor or a parameter value derived from the feature value and a preset threshold.

15. The operating method according to claim 13, wherein the part of the air inlet is blocked by a part of a body of a user or adjusting a mechanism of the electronic atomization apparatus.

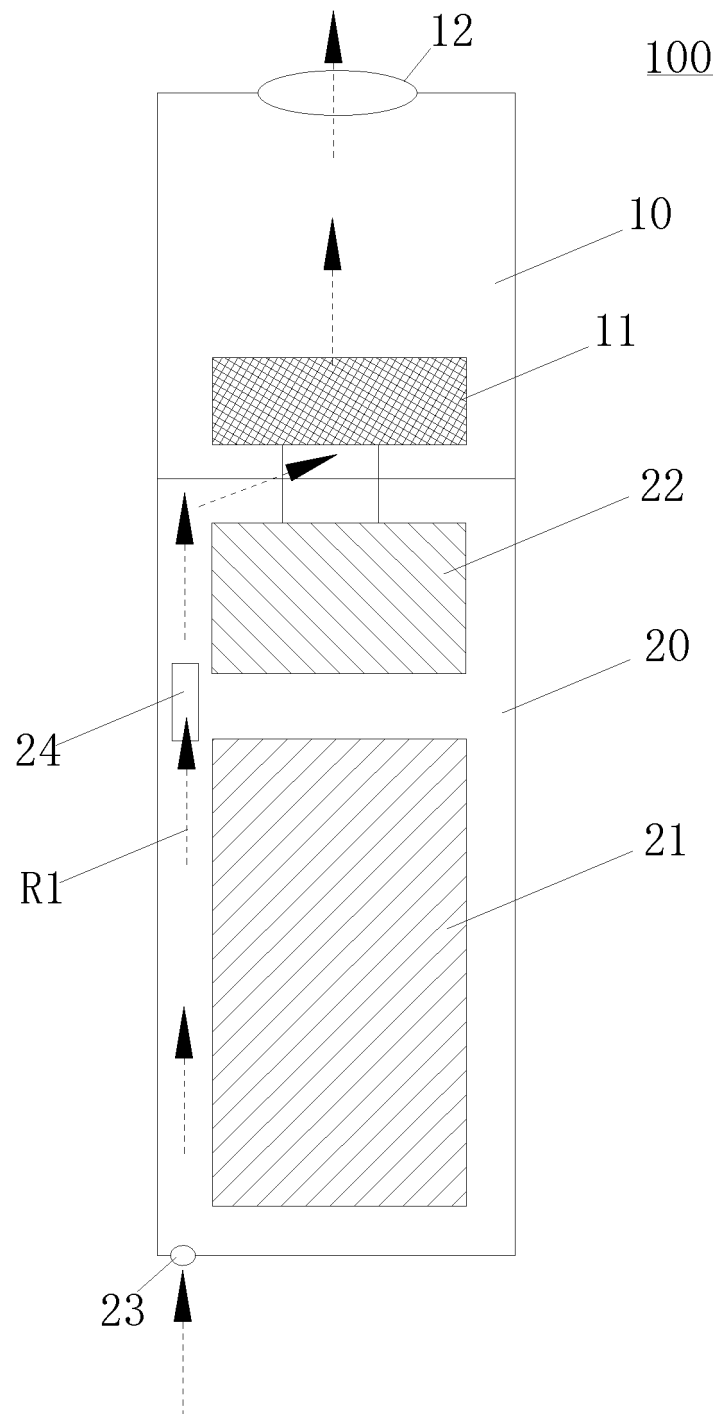


FIG. 1

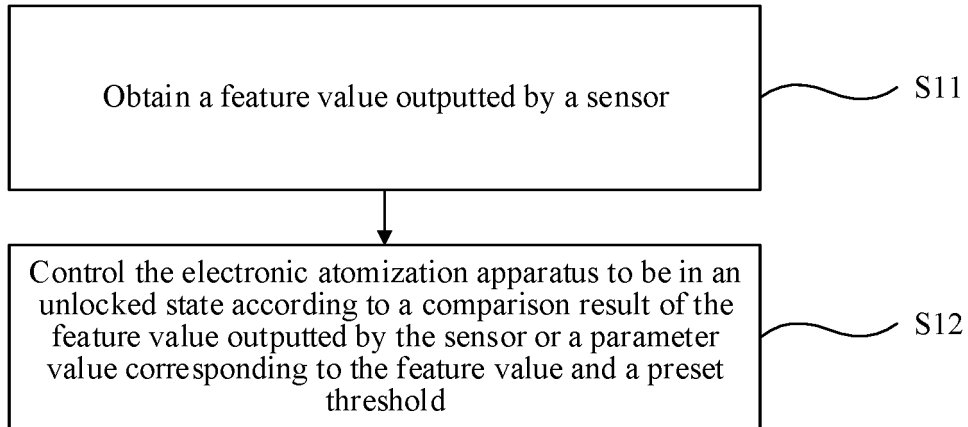


FIG. 2

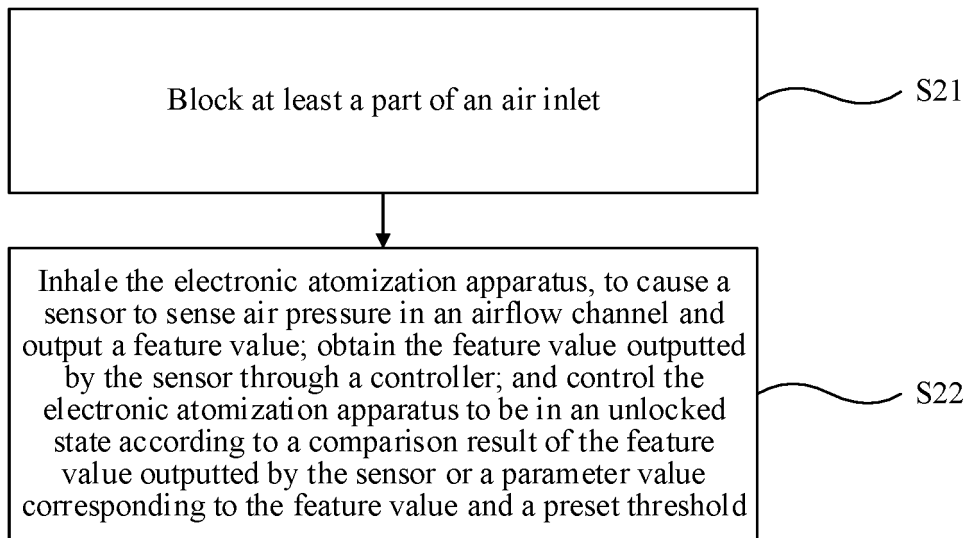


FIG. 3

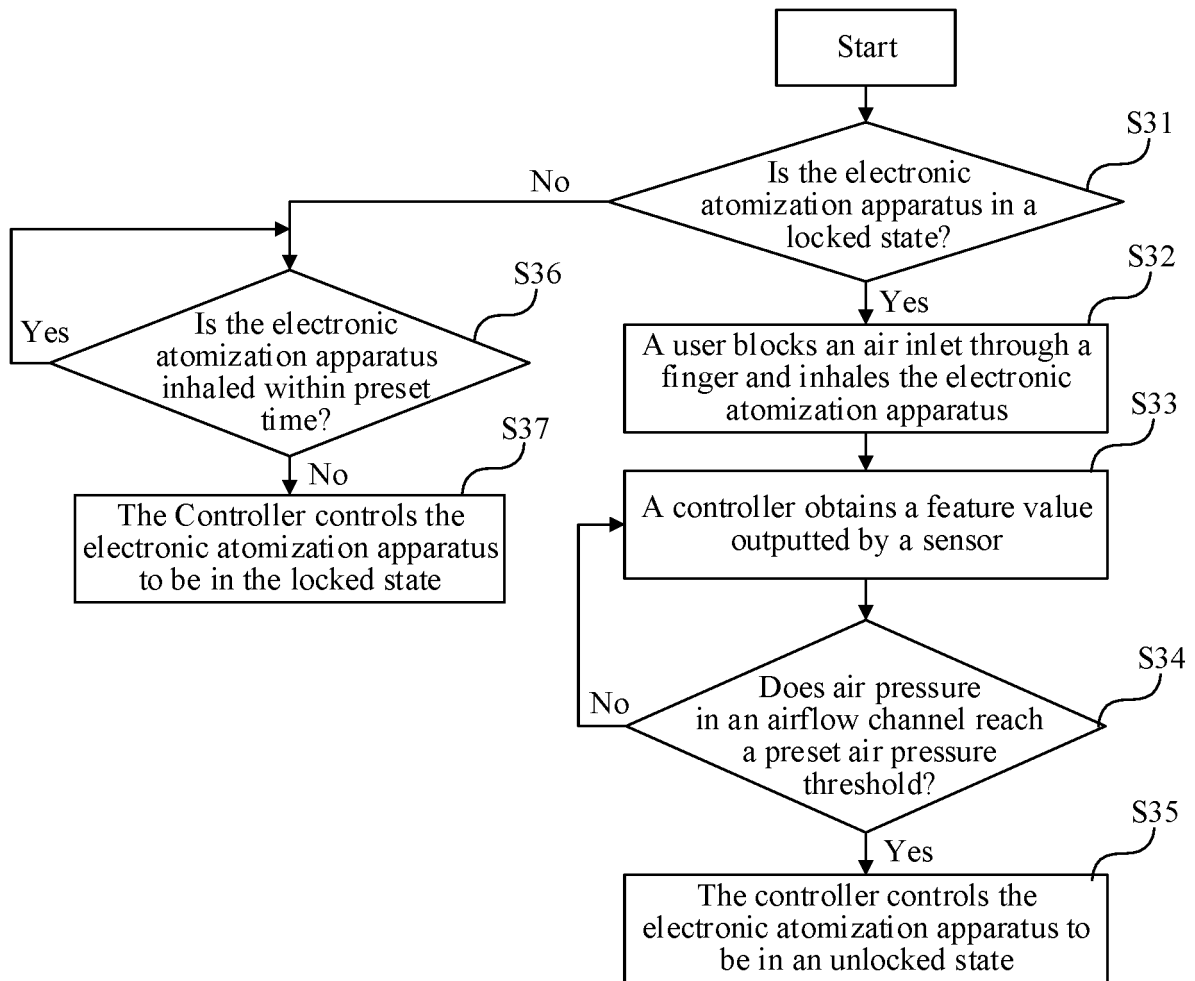


FIG. 4

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2023/071940

A. CLASSIFICATION OF SUBJECT MATTER A24F40/51(2020.01)i; A24F40/49(2020.01)i; A24F40/50(2020.01)i According to International Patent Classification (IPC) or to both national classification and IPC																		
B. FIELDS SEARCHED																		
Minimum documentation searched (classification system followed by classification symbols) A24F																		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched																		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) CNTXT; ENTXT; VEN: 雾化, 气流, 气压, 传感器, 儿童, atomize, airflow, pressure, sensor, detector, child																		
C. DOCUMENTS CONSIDERED TO BE RELEVANT																		
<table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>CN 106998810 A (JT INTERNATIONAL SA) 01 August 2017 (2017-08-01) description, paragraphs [0022]-[0043], and figures 1-3</td> <td>1-15</td> </tr> <tr> <td>X</td> <td>CN 207821090 U (CHANGZHOU PATENT ELECTRONIC TECHNOLOGY CO., LTD.) 07 September 2018 (2018-09-07) description, paragraphs [0029]-[0051], and figures 1-3</td> <td>1-15</td> </tr> <tr> <td>X</td> <td>CN 207821091 U (CHANGZHOU PATENT ELECTRONIC TECHNOLOGY CO., LTD.) 07 September 2018 (2018-09-07) description, paragraphs [0029]-[0051], and figures 1-3</td> <td>1-15</td> </tr> <tr> <td>A</td> <td>CN 110037350 A (SHENZHEN SMOORE TECHNOLOGY LIMITED) 23 July 2019 (2019-07-23) entire document</td> <td>1-15</td> </tr> <tr> <td>A</td> <td>CN 107105788 A (HUIZHOU KIMREE TECHNOLOGY CO., LTD. SHENZHEN BRANCH) 29 August 2017 (2017-08-29) entire document</td> <td>1-15</td> </tr> </tbody> </table>	Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X	CN 106998810 A (JT INTERNATIONAL SA) 01 August 2017 (2017-08-01) description, paragraphs [0022]-[0043], and figures 1-3	1-15	X	CN 207821090 U (CHANGZHOU PATENT ELECTRONIC TECHNOLOGY CO., LTD.) 07 September 2018 (2018-09-07) description, paragraphs [0029]-[0051], and figures 1-3	1-15	X	CN 207821091 U (CHANGZHOU PATENT ELECTRONIC TECHNOLOGY CO., LTD.) 07 September 2018 (2018-09-07) description, paragraphs [0029]-[0051], and figures 1-3	1-15	A	CN 110037350 A (SHENZHEN SMOORE TECHNOLOGY LIMITED) 23 July 2019 (2019-07-23) entire document	1-15	A	CN 107105788 A (HUIZHOU KIMREE TECHNOLOGY CO., LTD. SHENZHEN BRANCH) 29 August 2017 (2017-08-29) entire document	1-15
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* Special categories of cited documents: “A” document defining the general state of the art which is not considered to be of particular relevance “D” document cited by the applicant in the international application “E” earlier application or patent but published on or after the international filing date “L” document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) “O” document referring to an oral disclosure, use, exhibition or other means “P” document published prior to the international filing date but later than the priority date claimed	“T” later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention “X” document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone “Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art “&” document member of the same patent family																	
Date of the actual completion of the international search 08 May 2023	Date of mailing of the international search report 08 May 2023																	
Name and mailing address of the ISA/CN China National Intellectual Property Administration (ISA/CN) China No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088	Authorized officer Telephone No.																	

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INTERNATIONAL SEARCH REPORT

International application No.
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C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 209643862 U (SHENZHEN SMOORE TECHNOLOGY LIMITED) 19 November 2019 (2019-11-19) entire document	1-15
A	US 10334887 B1 (JOYETECH EUROPE HOLDING GMBH) 02 July 2019 (2019-07-02) entire document	1-15

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2023/071940

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 106998810 A	01 August 2017	JP 2017536109 A	07 December 2017
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CN 207821090 U	07 September 2018	None	
CN 207821091 U	07 September 2018	None	
CN 110037350 A	23 July 2019	None	
CN 107105788 A	29 August 2017	WO 2017031662 A1	02 March 2017
CN 209643862 U	19 November 2019	None	
US 10334887 B1	02 July 2019	US 2019261695 A1	29 August 2019
		US 10524517 B2	07 January 2020

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REFERENCES CITED IN THE DESCRIPTION

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- CN 202210100306 [0001]