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(54) **INHALATION DEVICE, CONTROL METHOD, AND STORAGE MEDIUM**

(71) Applicant: **Japan Tobacco Inc.**, Tokyo (JP)

(72) Inventor: **Hiroshi TEZUKA**, Tokyo (JP)

(73) Assignee: **Japan Tobacco Inc.**, Tokyo (JP)

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(57) **ABSTRACT**

An inhalation device that generates an aerosol from a base material including an aerosol source, includes: a control unit configured to control an operation of the inhalation device. The control unit acquires height information indicating a height at which the inhalation device is located, determines whether the height is less than a threshold based on the height information, and restricts a predetermined operation in the inhalation device when it is determined that the height is less than the threshold.

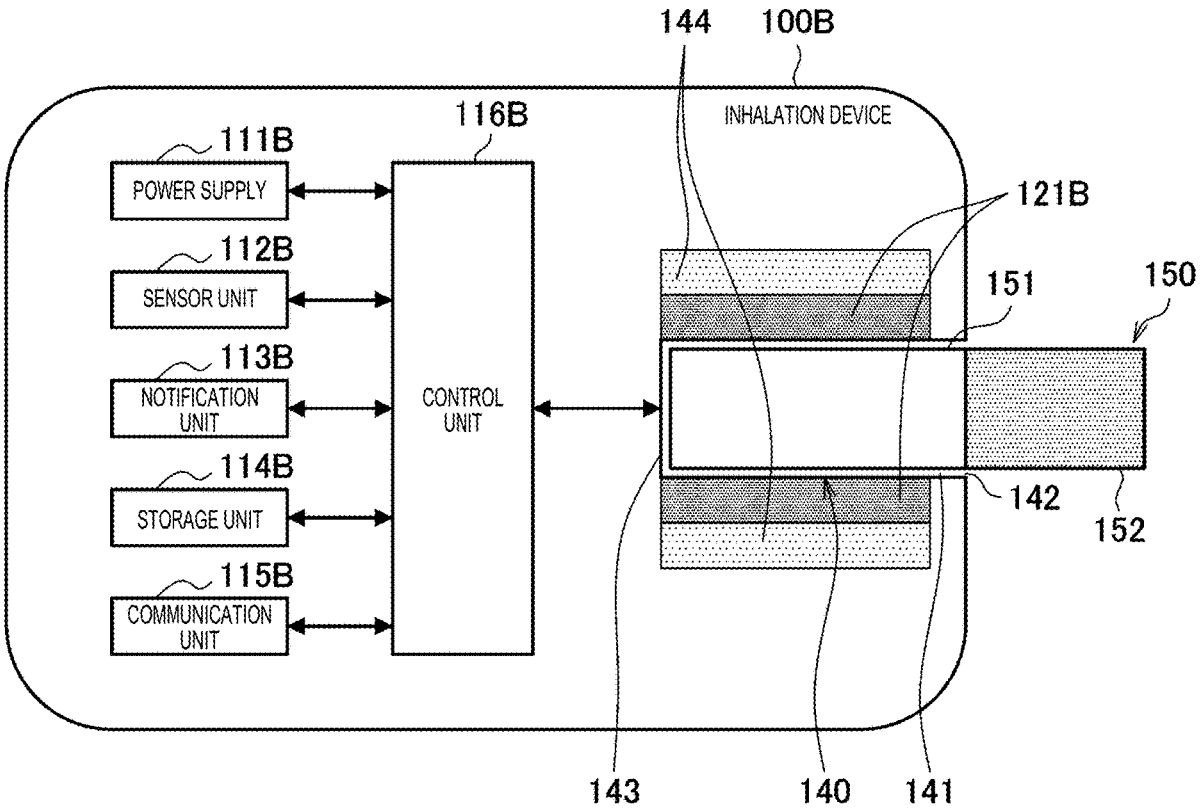
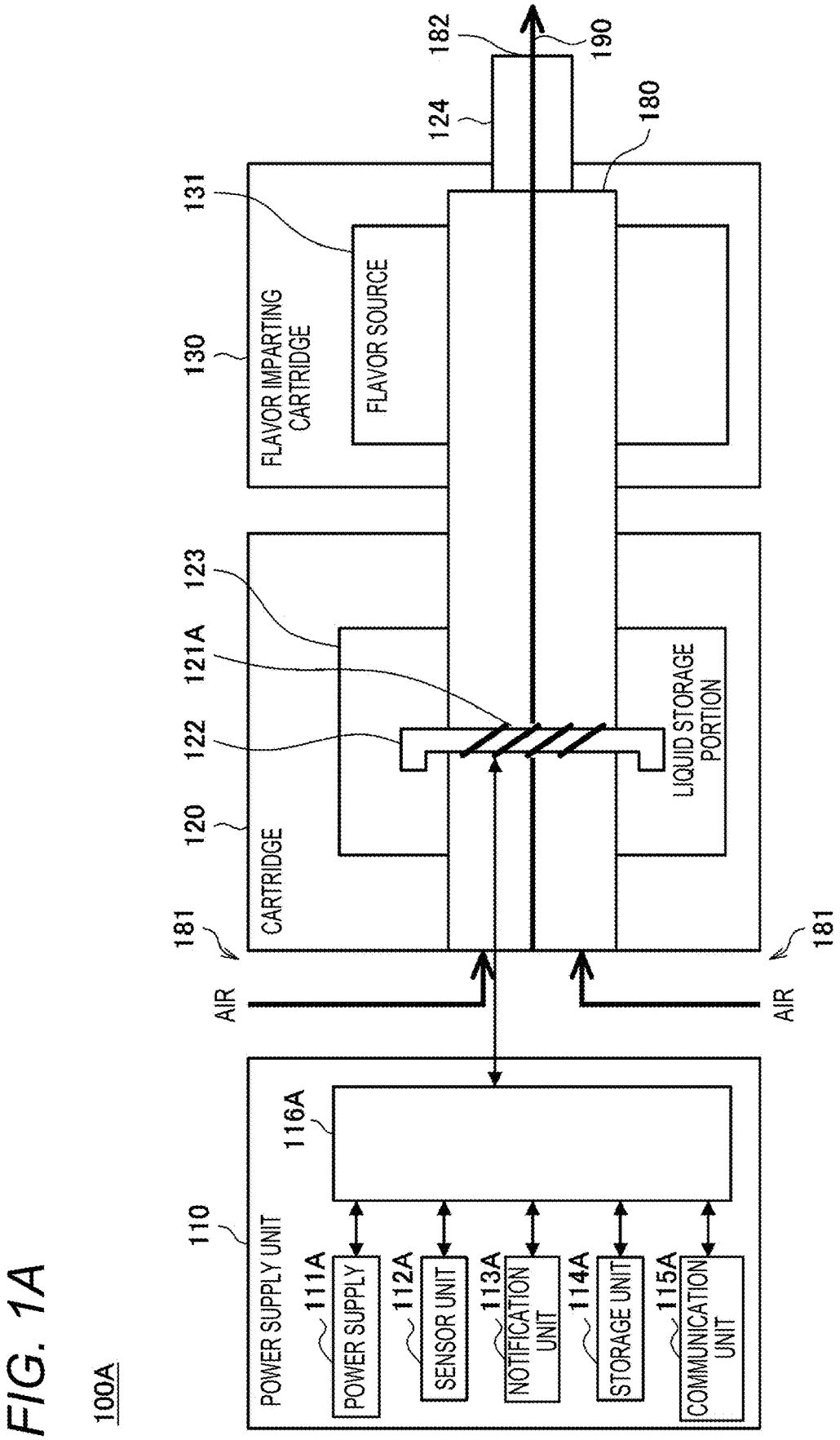


FIG. 1A


100A
110
POWER SUPPLY UNIT
111A
POWER SUPPLY
112A
SENSOR UNIT
113A
NOTIFICATION UNIT
114A
STORAGE UNIT
115A
COMMUNICATION UNIT
116A
AIR
AIR
181
181
120
CARTRIDGE
122
121A
123
LIQUID STORAGE PORTION
130
FLAVOR IMPARTING CARTRIDGE
131
FLAVOR SOURCE
124
180
182
190

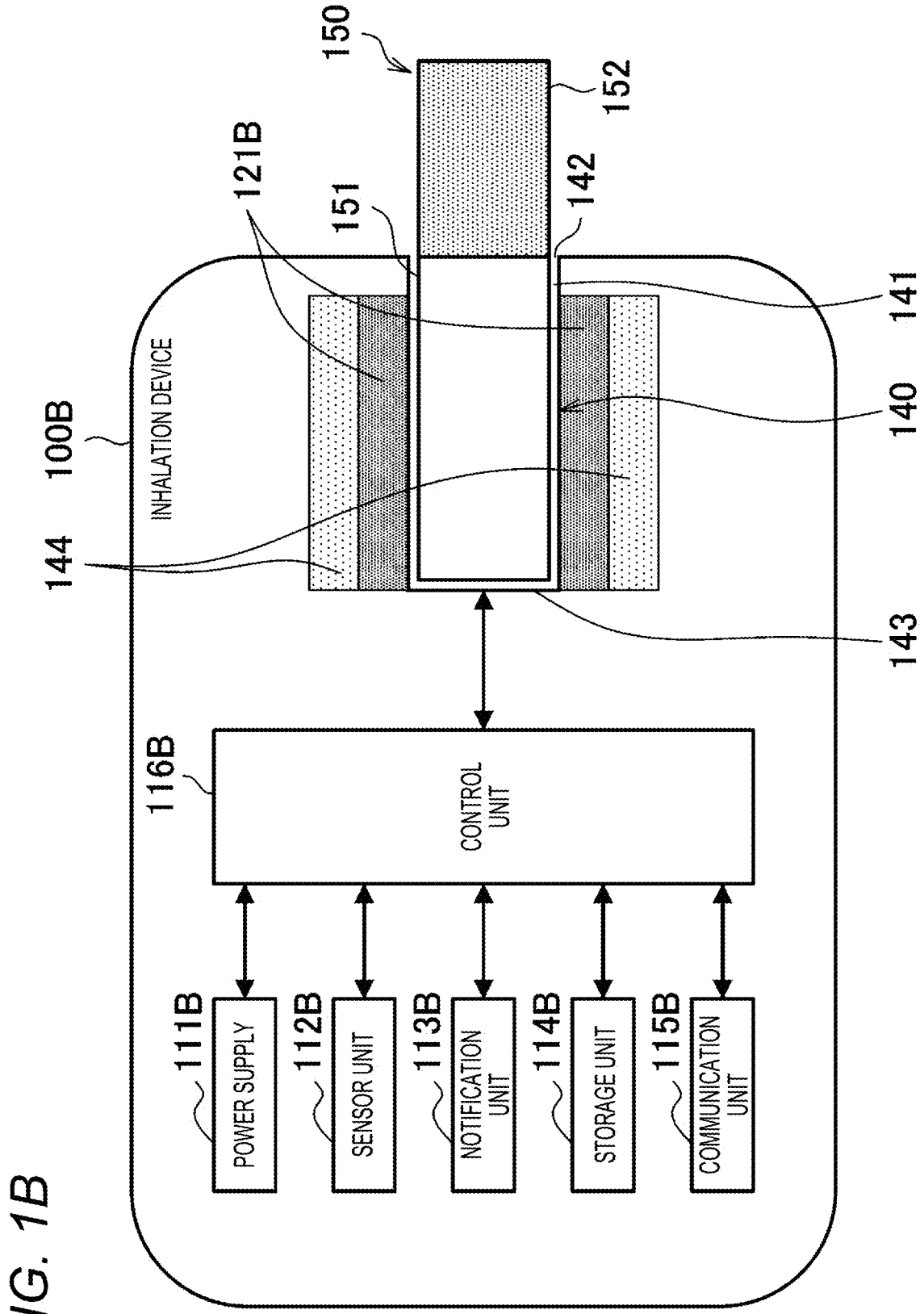

150
152
121B
151
142
141
140
144
143
100B
INHALATION DEVICE
116B
CONTROL UNIT
111B
POWER SUPPLY
112B
SENSOR UNIT
113B
NOTIFICATION UNIT
114B
STORAGE UNIT
115B
COMMUNICATION UNIT

FIG. 1B

FIG. 2

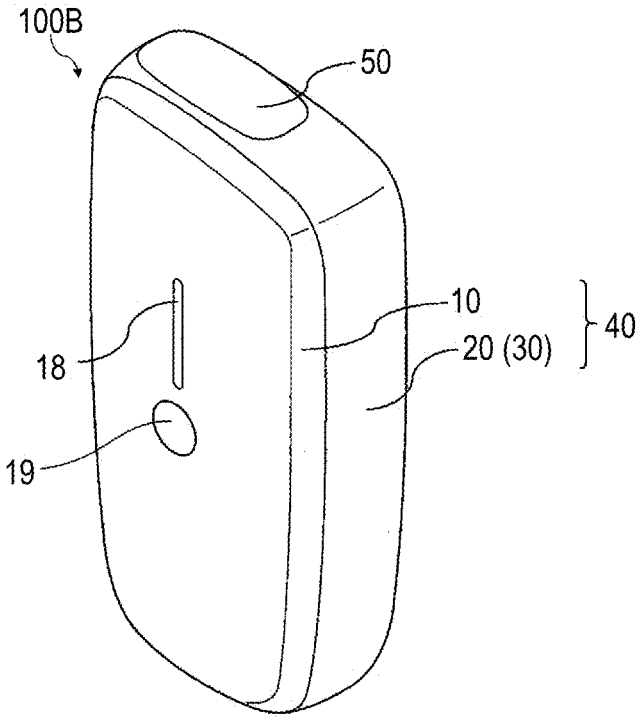

100B
50
10
20 (30)
40
18
19

FIG. 3

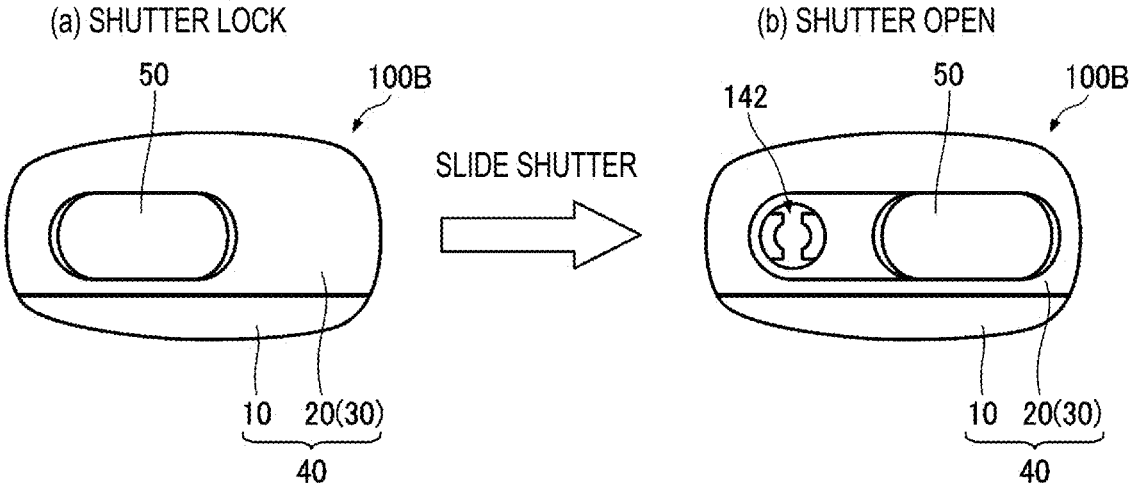

(a) SHUTTER LOCK
50
100B
10
20(30)
40
SLIDE SHUTTER
(b) SHUTTER OPEN
142
50
100B
10
20(30)
40

FIG. 4

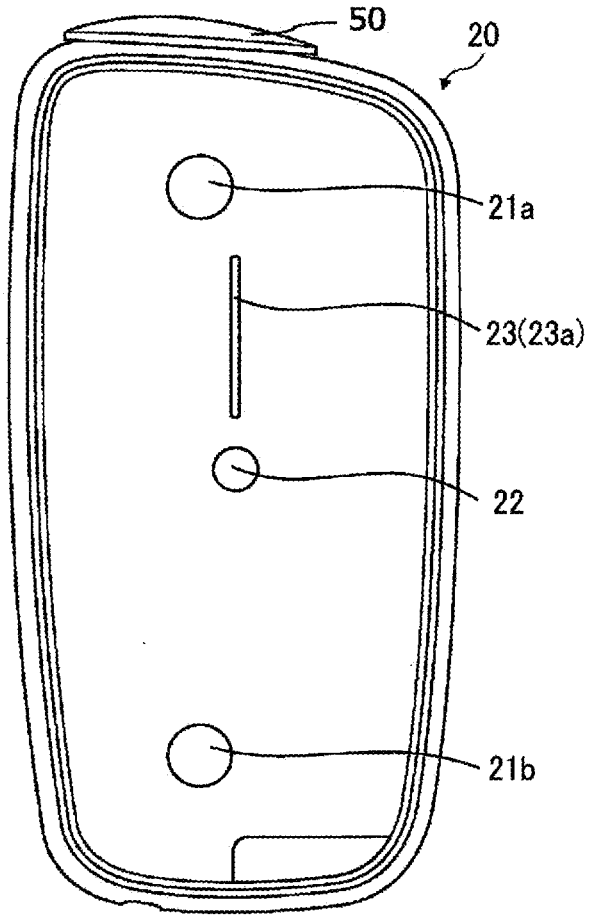


FIG. 5

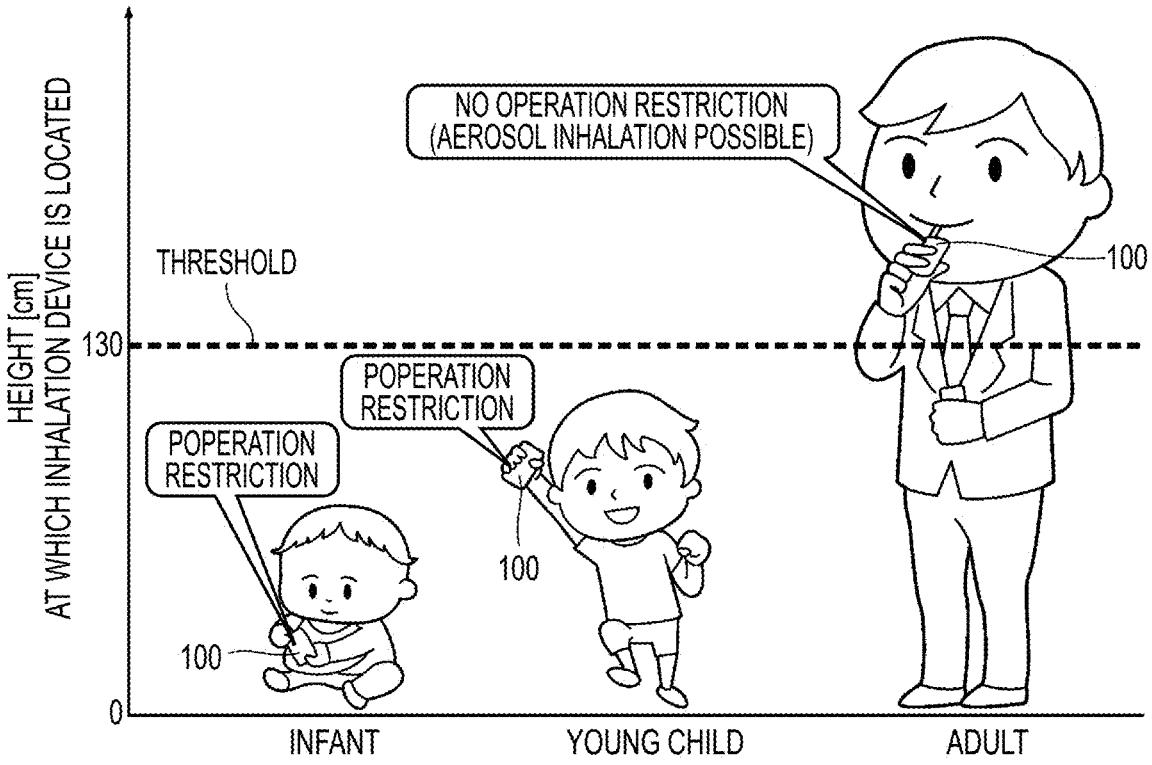

HEIGHT [cm]
AT WHICH INHALATION DEVICE IS LOCATED
130
0
THRESHOLD
NO OPERATION RESTRICTION
(AEROSOL INHALATION POSSIBLE)
100
POPERATION
RESTRICTION
POPERATION
RESTRICTION
100
100
INFANT
YOUNG CHILD
ADULT

FIG. 6

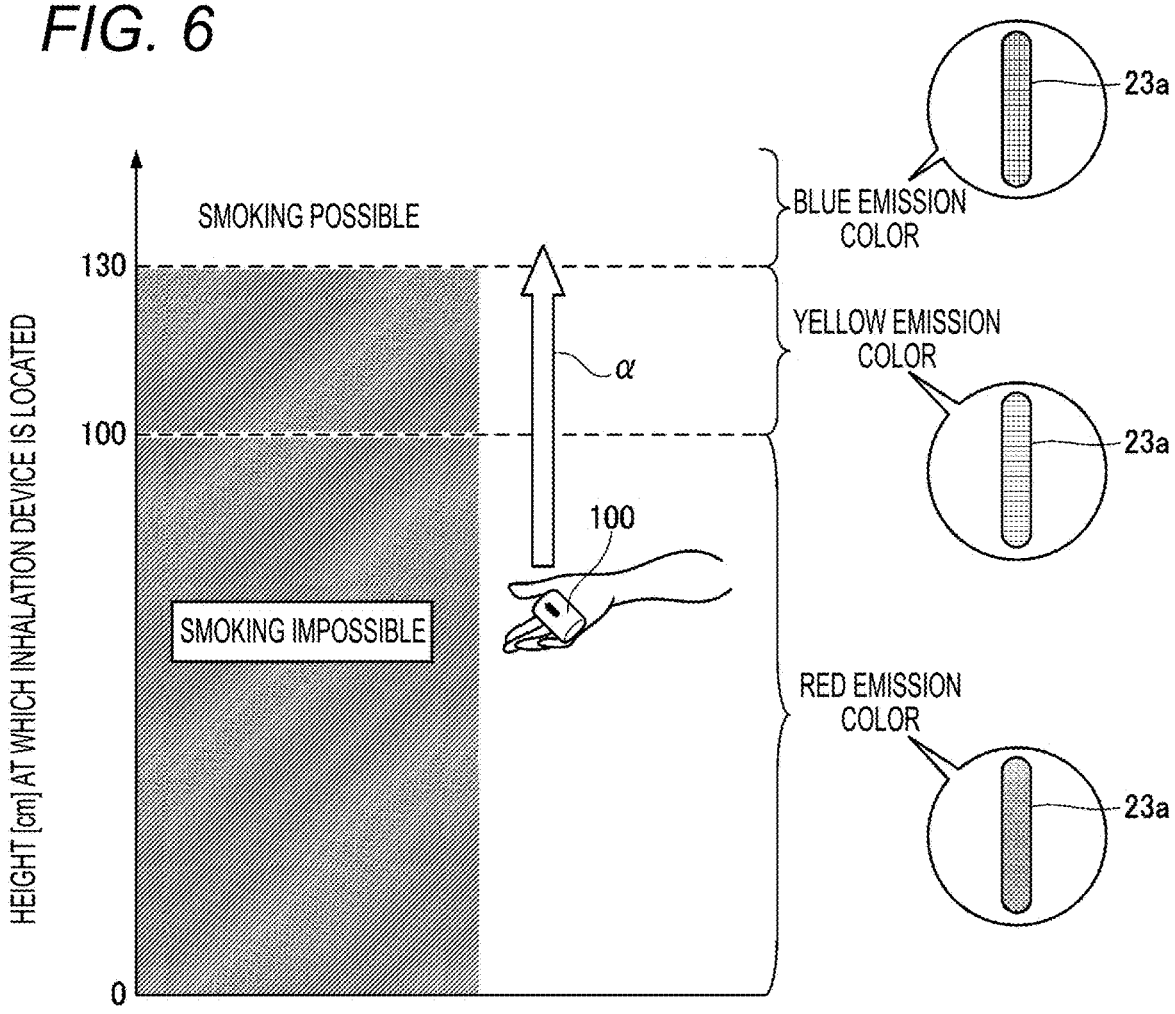

23a
SMOKING POSSIBLE
130
100
0
HEIGHT [cm] AT WHICH INHALATION DEVICE IS LOCATED
α
100
SMOKING IMPOSSIBLE
BLUE EMISSION COLOR
YELLOW EMISSION COLOR
RED EMISSION COLOR
23a
23a
23a

FIG. 7

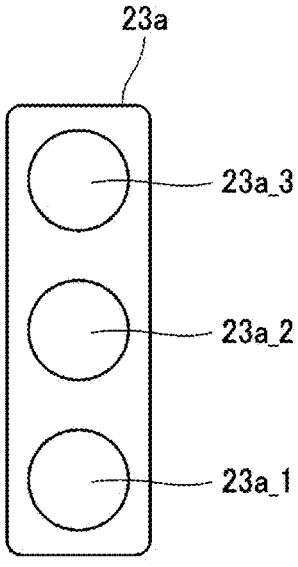

23a
23a_3
23a_2
23a_1

FIG. 8

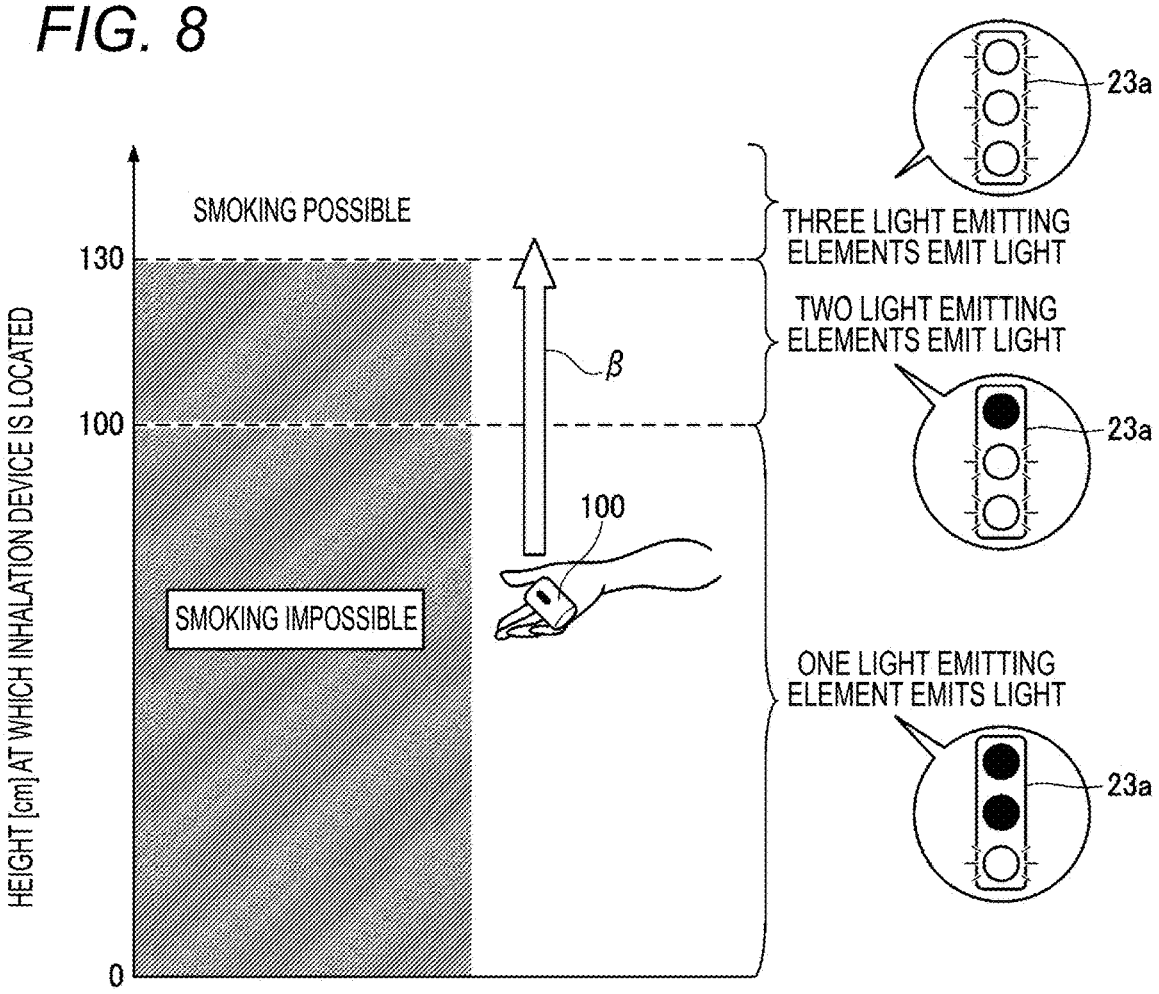

23a
SMOKING POSSIBLE
130
100
0
HEIGHT [cm] AT WHICH INHALATION DEVICE IS LOCATED
β
100
SMOKING IMPOSSIBLE
THREE LIGHT EMITTING ELEMENTS EMIT LIGHT
TWO LIGHT EMITTING ELEMENTS EMIT LIGHT
23a
ONE LIGHT EMITTING ELEMENT EMITS LIGHT
23a

FIG. 9

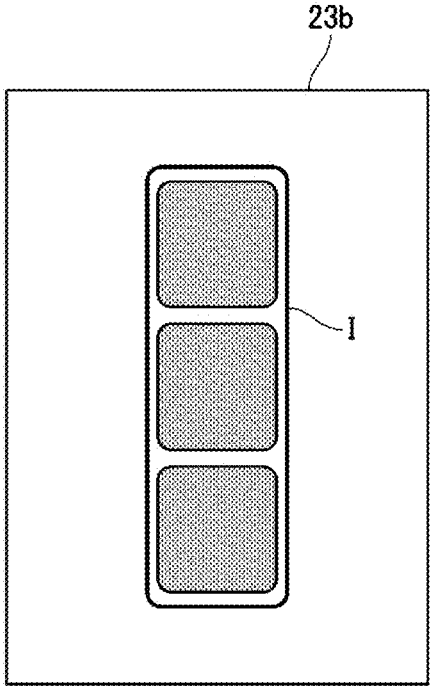

23b
I

FIG. 10

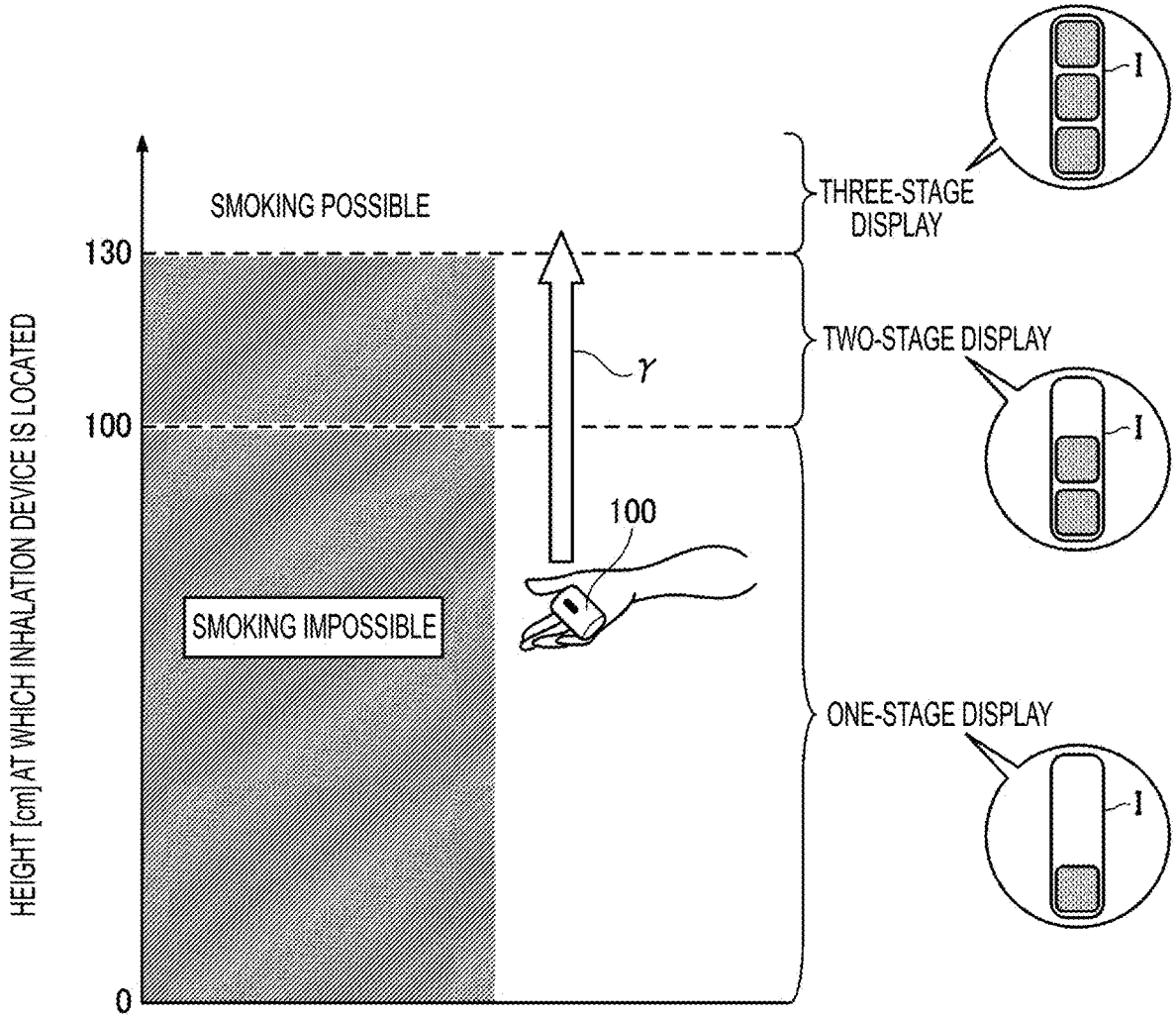

HEIGHT [cm] AT WHICH INHALATION DEVICE IS LOCATED
SMOKING POSSIBLE
SMOKING IMPOSSIBLE
130
100
0
γ
100
THREE-STAGE DISPLAY
TWO-STAGE DISPLAY
ONE-STAGE DISPLAY
1
1
1

FIG. 11

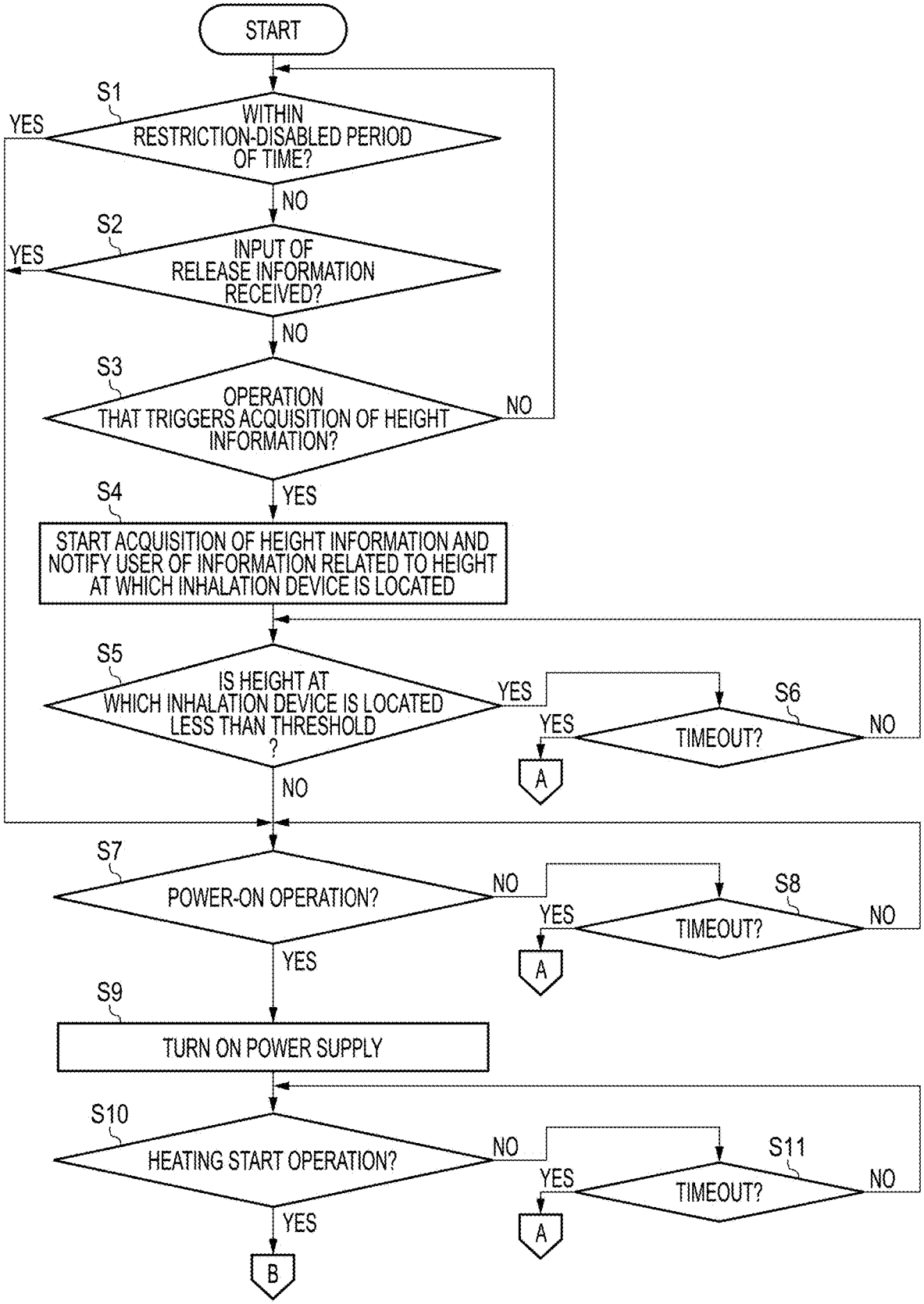
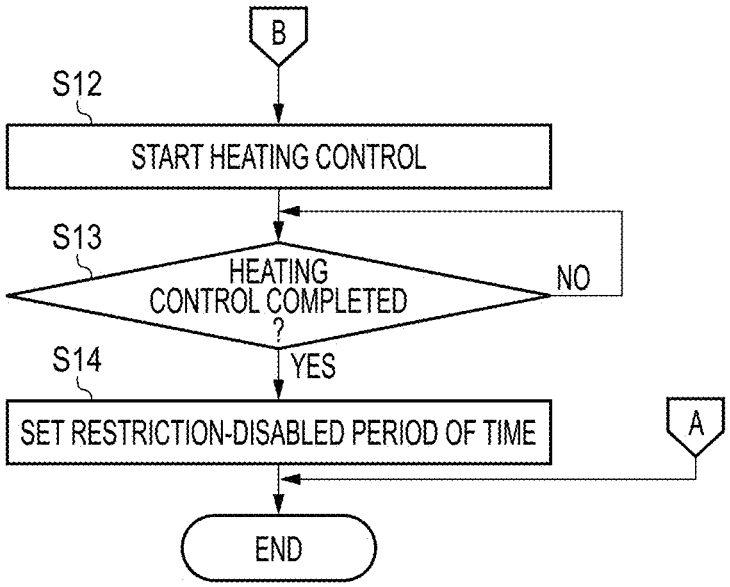

START
S1
WITHIN RESTRICTION-DISABLED PERIOD OF TIME?
YES
NO
S2
INPUT OF RELEASE INFORMATION RECEIVED?
YES
NO
S3
OPERATION THAT TRIGGERS ACQUISITION OF HEIGHT INFORMATION?
NO
YES
S4
START ACQUISITION OF HEIGHT INFORMATION AND NOTIFY USER OF INFORMATION RELATED TO HEIGHT AT WHICH INHALATION DEVICE IS LOCATED
S5
IS HEIGHT AT WHICH INHALATION DEVICE IS LOCATED LESS THAN THRESHOLD ?
YES
NO
S6
TIMEOUT?
YES
NO
A
S7
POWER-ON OPERATION?
NO
YES
S8
TIMEOUT?
YES
NO
A
S9
TURN ON POWER SUPPLY
S10
HEATING START OPERATION?
NO
YES
S11
TIMEOUT?
YES
NO
A
B

FIG. 12


B
S12
START HEATING CONTROL
S13
HEATING CONTROL COMPLETED ?
NO
YES
S14
SET RESTRICTION-DISABLED PERIOD OF TIME
A
END

INHALATION DEVICE, CONTROL METHOD, AND STORAGE MEDIUM

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This is a continuation of International Application No. PCT/JP2022/031137 filed on Aug. 17, 2022, the entire content of which is incorporated herein by reference.

TECHNICAL FIELD

[0002] The present disclosure relates to an inhalation device, a control method, and a storage medium.

BACKGROUND ART

[0003] In the related art, for example, there is known an inhaler that generates an aerosol to which a flavor component is applied and allows a user to inhale the generated aerosol. Such an inhaler typically delivers, to the user, the aerosol generated by heating a base material containing an aerosol source with a heating unit (also referred to as a "heating element") which is an electrical resistance heater or an induction heater. Further, such an inhaler also has a so-called "child resistance function" in order to prevent an occurrence of inconvenience caused by misuse by a child (for example, an infant and a young child).

[0004] For example, JP2020-506121A below discloses that, in order to restrict access to contents of a container, a combination of two or more different operations such as squeezing while rotating a cap is required, as the child resistance function.

[0005] Further, JP2019-505190A below discloses that a mouthpiece that moves relative to a main body portion between a first position and a second position to switch a device between a stopped state and an operating state is biased toward the first position by a spring or the like, and the device is maintained in the stopped state against a predetermined biasing force. It is disclosed that the predetermined biasing force can be selected to exceed a normal force of the infants (an expected hand force) in order to set the switching of the device in the operating state to be child-resistant.

SUMMARY

[0006] However, a history of the technical development of the inhaler is still young. Therefore, there is a room for improvement in the child resistance function of the inhaler from a viewpoint of improving a performance.

[0007] Aspect of the present disclosure relates to providing an inhalation device, a control method, and a storage medium storing a program capable of further preventing an occurrence of inconvenience caused by misuse by a child.

[0008] According to an aspect of the present disclosure, there is provided an inhalation device that generates an aerosol from a base material including an aerosol source, the inhalation device including:

[0009] a control unit configured to control an operation of the inhalation device, in which

[0010] the control unit

[0011] acquires height information indicating a height at which the inhalation device is located,

[0012] determines whether the height is less than a threshold based on the height information, and

[0013] restricts a predetermined operation in the inhalation device when it is determined that the height is less than the threshold.

[0014] According to another aspect of the present disclosure, there is provided a control method, the control method including a computer, for controlling an operation of an inhalation device that generates an aerosol from a base material including an aerosol source, performing the following processing:

[0015] acquiring height information indicating a height at which the inhalation device is located;

[0016] determining whether the height is less than a threshold based on the height information; and

[0017] restricting a predetermined operation in the inhalation device when it is determined that the height is less than the threshold.

[0018] According to another aspect of the present disclosure, there is provided a non-transitory computer-readable storage medium storing a program causing a computer, for controlling an operation of an inhalation device that generates an aerosol from a base material including an aerosol source, to perform the following processing:

[0019] acquiring height information indicating a height at which the inhalation device is located;

[0020] determining whether the height is less than a threshold based on the height information; and

[0021] restricting a predetermined operation in the inhalation device when it is determined that the height is less than the threshold.

[0022] According to aspects of the present disclosure, an inhalation device, a control method, and a storage medium storing a program capable of further preventing an occurrence of inconvenience caused by misuse by a child can be provided.

BRIEF DESCRIPTION OF DRAWINGS

[0023] FIG. **1**A is a schematic diagram schematically illustrating a first configuration example of an inhalation device;

[0024] FIG. **1**B is a schematic diagram schematically illustrating a second configuration example of the inhalation device;

[0025] FIG. **2** is an overall perspective view of an inhalation device **100**B;

[0026] FIG. **3** is a top view of the inhalation device **100**B;

[0027] FIG. **4** is a diagram illustrating the inhalation device **100**B in a state where a panel **10** is removed therefrom;

[0028] FIG. **5** is a diagram illustrating an example of a threshold as a condition for restricting an operation of an inhalation device **100**;

[0029] FIG. **6** is a diagram illustrating an example of a relationship between a height at which the inhalation device **100** is located and emission colors of a light emitting device **23***a*;

[0030] FIG. **7** is a diagram showing a modification of the light emitting device **23***a*;

[0031] FIG. **8** is a diagram illustrating an example of a relationship between the height at which the inhalation device **100** is located and the number of light emitting elements that emit light;

[0032] FIG. **9** is a diagram illustrating an example of a display device **23***b*;

[0033] FIG. **10** is a diagram illustrating an example of a relationship between the height at which the inhalation device **100** is located and a display mode of an indicator I of the display device **23***b*;

[0034] FIG. **11** is a flowchart (part **1**) illustrating an example of processing performed by a control unit **116**; and

[0035] FIG. **12** is a flowchart (part **2**) illustrating an example of the processing performed by the control unit **116**.

DESCRIPTION OF EMBODIMENTS

[0036] Hereinafter, an inhalation device, a control method, and a storage medium storing a program according to an embodiment of the present disclosure will be described with reference to the drawings. Hereinafter, the same or similar elements are denoted by the same or similar reference numerals, and the description thereof may be appropriately omitted or simplified.

1. Configuration Example of Inhalation Device

[0037] An inhalation device of the present embodiment is a device that generates a substance to be inhaled by a user. Hereinafter, the substance generated by the inhalation device will be described as an aerosol. Further, the substance generated by the inhalation device may be a gas.

(1) First Configuration Example

[0038] FIG. **1**A is a schematic diagram schematically illustrating a first configuration example of the inhalation device. As illustrated in FIG. **1**A, an inhalation device **100**A according to the present configuration example includes a power supply unit **110**, a cartridge **120**, and a flavor imparting cartridge **130**. The power supply unit **110** includes a power supply **111**A, a sensor unit **112**A, a notification unit **113**A, a storage unit **114**A, a communication unit **115**A, and a control unit **116**A. The cartridge **120** includes a heating unit **121**A, a liquid guide portion **122**, and a liquid storage portion **123**. The flavor imparting cartridge **130** includes a flavor source **131** and a mouthpiece **124**. An air flow path **180** is formed in the cartridge **120** and the flavor imparting cartridge **130**.

[0039] The power supply **111**A stores electric power. The power supply **111**A supply the electric power to each component of the inhalation device **100**A under control of the control unit **116**A. The power supply **111**A may be implemented by, for example, a rechargeable battery such as a lithium-ion secondary battery.

[0040] The sensor unit **112**A acquires various types of information related to the inhalation device **100**A. As an example, the sensor unit **112**A is implemented by a pressure sensor such as a condenser microphone, a flow rate sensor, a temperature sensor, or the like, and acquires a value associated with inhalation of the user. As another example, the sensor unit **112**A is implemented by an input device for receiving an input of information from the user, such as an operation button or a switch.

[0041] For example, the sensor unit **112**A includes a pressure sensor (also referred to as a "puff sensor") that detects a change in a pressure (that is, an internal pressure) inside the inhalation device **100**A caused by the inhalation of the user. Further, the sensor unit **112**A may include a flow rate sensor that detects a flow rate generated by the inhalation of the user, and a temperature sensor (also referred to as a "puff thermistor") that detects a temperature of the heating unit **121**A or around the heating unit **121**A.

[0042] Further, the sensor unit **112**A may include a height sensor that detects the height at which the inhalation device **100**A is located. As an example, the height sensor is implemented by a pressure sensor (that is, an atmospheric pressure sensor) that detects an atmospheric pressure applied to the inhalation device **100**A. As another example, the height sensor may be implemented by a distance measurement sensor that detects a distance between the inhalation device **100**A and a target. The distance measurement sensor can be, for example, a radar sensor that detects a distance to the target by irradiating the target with a predetermined radar wave. In this case, a laser, a microwave, a millimeter wave, or an ultrasonic wave may be adopted as the radar wave.

[0043] The notification unit **113**A notifies the user of the information. Examples of the notification unit **113**A include a light emitting device (for example, a light emitting device **23***a* to be described later) that emits light, a display device (for example, a display device **23***b* to be described later) that displays an image, a sound output device that outputs sound, or a vibration device that vibrates.

[0044] The storage unit **114**A stores various types of information for an operation of the inhalation device **100**A. The storage unit **114**A is implemented by, for example, a nonvolatile storage medium such as a flash memory.

[0045] The communication unit **115**A is a communication interface capable of performing communication conforming to any wired or wireless communication standard. As such a communication standard, for example, a standard using Wi-Fi (registered trademark), Bluetooth (registered trademark), Bluetooth Low Energy (BLE (registered trademark)), Near Field Communication (NFC), or Low Power Wide Area (LPWA) may be adopted.

[0046] The control unit **116**A functions as an arithmetic processing device and a control device, and controls overall operations in the inhalation device **100**A according to various programs. The control unit **116**A is implemented by, for example, an electronic circuit such as a central processing unit (CPU) or a microprocessor.

[0047] The liquid storage portion **123** stores an aerosol source. That is, the cartridge **120** including the liquid storage portion **123** for storing the aerosol source is an example of a base material including the aerosol source. The aerosol source is atomized to generate an aerosol.

[0048] The aerosol source is, for example, a liquid such as water or a polyhydric alcohol such as glycerin and propylene glycol. The aerosol source may contain a flavor component derived from tobacco or non-tobacco. When the inhalation device **100**A is a medical inhaler such as a nebulizer, the aerosol source may include a medical agent.

[0049] The liquid guide portion **122** guides the aerosol source, which is a liquid stored in the liquid storage portion **123**, from the liquid storage portion **123** and holds the aerosol source. The liquid guide portion **122** is, for example, a wick formed by twisting a fibrous material such as glass fibers or a porous material such as porous ceramics. In that case, the aerosol source stored in the liquid storage portion **123** is induced by a capillary effect of the wick.

[0050] The heating unit **121**A heats the aerosol source to atomize the aerosol source to generate the aerosol. In the example illustrated in FIG. **1**A, the heating unit **121**A is implemented by a coil and wound around the liquid guide portion **122**. When the heating unit **121**A generates heat, the

aerosol source held by the liquid guide portion **122** is heated and atomized, and the aerosol is generated. The heating unit **121**A generates heat when supplied with power from the power supply **111**A. As an example, the heating unit **121**A may be supplied with power when the sensor unit **112**A detects that the user starts the inhalation and/or that predetermined information is input. Further, when the sensor unit **112**A detects that the user finishes the inhalation and/or that predetermined information is input, the supply of power to the heating unit **121**A may be stopped. An inhalation operation of the user with respect to the inhalation device **100**A can be detected, for example, based on the fact that the pressure (internal pressure) inside the inhalation device **100**A detected by the puff sensor exceeds a predetermined threshold.

[0051] The flavor source **131** is a component for imparting the flavor component to the aerosol. The flavor source **131** may contain the flavor component derived from tobacco or non-tobacco.

[0052] The air flow path **180** is a flow path of air inhaled by the user. The air flow path **180** has a tubular structure having an air inflow hole **181** which is an inlet of air into the air flow path **180** and an air outflow hole **182** which is an outlet of air from the air flow path **180** as both ends. In the middle of the air flow path **180**, the liquid guide portion **122** is disposed on an upstream side (a side close to the air inflow hole **181**), and the flavor source **131** is disposed on a downstream side (a side close to the air outflow hole **182**). The air flowing in from the air inflow hole **181** in response to the inhalation of the user is mixed with the aerosol generated by the heating unit **121**A, passes through the flavor source **131**, and is transported to the air outflow hole **182** as indicated by an arrow **190**. When a mixed fluid of the aerosol and the air passes through the flavor source **131**, the flavor component contained in the flavor source **131** is imparted to the aerosol.

[0053] The mouthpiece **124** is a member that can be held by the user in his/her mouth during the inhalation. The air outflow hole **182** is disposed in the mouthpiece **124**. The user can take in the mixed fluid of the aerosol and the air into the oral cavity by holding the mouthpiece **124** in his/her mouth and inhaling the mouthpiece **124**.

[0054] The configuration example of the inhalation device **100**A has been described above. It is needless to say that the configuration of the inhalation device **100**A is not limited to the above, and may adopt various configurations as exemplified below.

[0055] As an example, the inhalation device **100**A may not include the flavor imparting cartridge **130**. In this case, the mouthpiece **124** is provided on the cartridge **120**.

[0056] As another example, the inhalation device **100**A may further include a second heating unit that heats the flavor source **131**. In this case, the second heating unit is formed in a film shape, for example, and is disposed to cover an outer periphery of the flavor imparting cartridge **130**. Then, the second heating unit generates heat when being supplied with electric power from the power supply **111**A, and heats the flavor imparting cartridge **130** from the outer periphery. By providing such a second heating unit, a temperature of the flavor source **131** can be increased and an amount of the flavor component applied to the aerosol can be increased, as compared with a case where the second heating unit is not provided. When such a second heating unit is provided, the power to be supplied to the second heating unit may be controlled such that an actual temperature becomes a predetermined target temperature, for example, similarly to a heating unit **121**B to be described later.

[0057] As another example, the inhalation device **100**A may include a plurality of types of aerosol sources. A plurality of types of aerosols generated from the plurality of types of aerosol sources may be mixed in the air flow path **180** to cause a chemical reaction, thereby generating another type of aerosol.

[0058] A method for atomizing the aerosol source is not limited to heating by the heating unit **121**A. For example, the method for atomizing the aerosol source may be vibratory atomization or induction heating.

(2) Second Configuration Example

[0059] FIG. **1**B is a schematic diagram schematically illustrating a second configuration example of the inhalation device. As illustrated in FIG. **1**B, an inhalation device **100**B according to the present configuration example includes a power supply **111**B, a sensor unit **112**B, a notification unit **113**B, a storage unit **114**B, a communication unit **115**B, a control unit **116**B, a heating unit **121**B, an accommodating portion **140**, and a heat insulating portion **144**.

[0060] The power supply **111**B, the sensor unit **112**B, the notification unit **113**B, the storage unit **114**B, the communication unit **115**B, and the control unit **116**B are substantially the same as the corresponding components provided in the inhalation device **100**A according to the first configuration example.

[0061] The accommodating portion **140** has an internal space **141**, and holds the stick-type base material **150** while accommodating a part of the stick-type base material **150** in the internal space **141**. The accommodating portion **140** has an opening **142** through which the internal space **141** communicates with the outside, and holds the stick-type base material **150** inserted into the internal space **141** from the opening **142**. For example, the accommodating portion **140** is a cylindrical body having the opening **142** and a bottom portion **143** as a bottom surface, and defines the columnar internal space **141**. An air flow path for supplying air to the internal space **141** is connected to the accommodating portion **140**. An air inflow hole, which is an inlet of air to the air flow path, is disposed, for example, in a side surface of the inhalation device **100**. An air outflow hole, which is an outlet of air from the air flow path to the internal space **141**, is disposed, for example, in the bottom portion **143**.

[0062] The stick-type base material **150** includes a base material portion **151** and an inhalation port portion **152**. The base material portion **151** includes the aerosol source. That is, the stick-type base material **150** is another example of the base material including the aerosol source. The aerosol source contains the flavor component derived from tobacco or non-tobacco. When the inhalation device **100**B is a medical inhaler such as a nebulizer, the aerosol source may include a medical agent. For example, the aerosol source may be a liquid such as water and polyhydric alcohols such as glycerin and propylene glycol, including the flavor component derived from tobacco or non-tobacco, or may be a solid including the flavor component derived from tobacco or non-tobacco. In a state where the stick-type base material **150** is held by the accommodating portion **140**, at least a part of the base material portion **151** is accommodated in the

internal space **141**, and at least a part of the inhalation port portion **152** protrudes from the opening **142**. When the user holds the inhalation port portion **152** protruding from the opening **142** in his/her mouth and inhales, air flows into the internal space **141** through an air flow path that is not illustrated, and reaches the oral cavity of the user together with the aerosol generated from the base material portion **151**.

[0063] In the example illustrated in FIG. **1**B, the heating unit **121**B is formed in a film shape, and is disposed to cover an outer periphery of the accommodating portion **140**. Then, when the heating unit **121**B generates heat, the base material portion **151** of the stick-type base material **150** is heated from the outer periphery thereof, and the aerosol is generated.

[0064] The heat insulating portion **144** prevents heat transfer from the heating unit **121**B to other components. For example, the heat insulating portion **144** is made of a vacuum heat insulating material or an aerogel heat insulating material.

[0065] The configuration example of the inhalation device **100**B has been described above. It is needless to say that the configuration of the inhalation device **100**B is not limited to the above, and may adopt various configurations as exemplified below.

[0066] As an example, the heating unit **121**B may be formed in a blade shape and disposed to protrude from the bottom portion **143** of the accommodating portion **140** into the internal space **141**. In this case, the blade-shaped heating unit **121**B is inserted into the base material portion **151** of the stick-type base material **150**, and heats the base material portion **151** of the stick-type base material **150** from the inside. As another example, the heating unit **121**B may be disposed to cover the bottom portion **143** of the accommodating portion **140**. Further, the heating unit **121**B may be configured as a combination of two or more of a first heating unit covering the outer periphery of the accommodating portion **140**, a blade-shaped second heating unit, and a third heating unit covering the bottom portion **143** of the accommodating portion **140**.

[0067] As another example, the accommodating portion **140** may include an opening and closing mechanism such as a hinge that opens and closes a part of an outer shell forming the internal space **141**. The accommodating portion **140** may open and close the outer shell to sandwich and accommodate the stick-type base material **150** inserted into the internal space **141**. In this case, the heating unit **121**B may be provided at a sandwiching place in the accommodating portion **140**, and may heat the stick-type base material **150** while pressing the stick-type base material **150**.

[0068] The method for atomizing the aerosol source is not limited to heating by the heating unit **121**B. For example, the method for atomizing the aerosol source may be induction heating. In this case, the inhalation device **100**B at least includes an electromagnetic induction source such as a coil for generating a magnetic field, instead of the heating unit **121**B. A susceptor that generates heat due to the induction heating may be provided in the inhalation device **100**B or may be provided in the stick-type base material **150**.

[0069] The inhalation device **100**B may further include the heating unit **121**A, the liquid guide portion **122**, the liquid storage portion **123**, and the air flow path **180** according to the first configuration example, and the air flow path **180** may supply air to the internal space **141**. In this case, the mixed fluid of the aerosol and the air generated by the heating unit **121**A flows into the internal space **141**, is further mixed with the aerosol generated by the heating unit **121**B, and reaches the oral cavity of the user.

2. External Configuration Example of Inhalation Device

[0070] Next, an external configuration example of an inhalation device **100** (**100**A, **100**B) of the present embodiment will be described. Here, the inhalation device **100** is described as being the inhalation device **100**B illustrated in FIG. **1**B, but the present disclosure is not limited thereto, and the same can be applied to a case where the inhalation device **100** is the inhalation device **100**A illustrated in FIG. **1**A.

(1) Example of Inhalation Device with Panel Attached

[0071] FIG. **2** is an overall perspective view of the inhalation device **100**B. FIG. **3** illustrate top views of the inhalation device **100**B, and specifically, (a) of FIG. **3** illustrates the inhalation device **100**B in a state where the opening **142** is closed by a shutter **50** to be described later, and (b) of FIG. **3** illustrates the inhalation device **100**B in a state where the opening **142** is opened.

[0072] As illustrated in FIGS. **2** and **3**, the inhalation device **100**B includes a panel **10**, a main body housing **20** to which the panel **10** is detachably attached, and the shutter **50** which is slidable with respect to the main body housing **20**. The panel **10** and the main body housing **20** are formed as separated members.

[0073] The panel **10** is mainly implemented by a member serving as a cover lid that forms at least a part of a housing **40** (to be described later) on the outmost of the inhalation device **100**B. As illustrated in FIG. **2**, the panel **10** includes, on a surface (outer surface) thereof, a display part **18** and an operation part **19**. The display part **18** is made of a transparent material capable of transmitting light. Although details will be described later, the light emitting device **23***a* as an example of the notification unit **113**B is provided inside the inhalation device **100**B (inside a main body **30** to be described later). The user can visually recognize the light from the light emitting device **23***a* from the outer surface of the panel **10** via the display part **18**.

[0074] For example, the operation part **19** is configured to form a recess toward the main body housing **20**. Accordingly, a position of the operation part **19** can be indicated to the user. Further, the position of the operation part **19** may be indicated to the user by printing a predetermined mark (indication) on the surface of the panel **10**.

[0075] The main body housing **20** accommodates the main body **30** of the inhalation device **100**B. Components of the inhalation device **100**B illustrated in FIG. **1**B are accommodated in, for example, the main body **30**.

[0076] The panel **10** is attached to the main body housing **20** to form the outermost housing **40** of the inhalation device **100**B. For example, the user can make an appearance of the inhalation device **100**B match his/her preference by attaching the panel **10** having a design matching his/her preference. Further, since the inhalation device **100**B includes the panel **10**, even when the main body **30** generates heat, the heat to be released to the outside can be buffered. That is, for example, the panel **10** may function to insulate heat generated from the heating unit **121**B.

[0077] The housing **40** is preferably sized to be held in a hand of the user. For example, the user holds the inhalation device **100**B with one hand while bringing a fingertip into contact with the surface of the panel **10**. When the user presses the operation part **19** with the fingertip, the panel **10** is deformed such that the operation part **19** is further recessed toward the main body housing **20**. As a result of such deformation of the panel **10**, a bottom portion of the operation part **19** comes into contact with an operation button **22** (to be described later) provided on a surface of the main body housing **20**, and the operation button **22** is pressed down. As an example, the user can power on the inhalation device **100**B by pressing down the operation button **22** by pressing the operation part **19** with a finger.

[0078] FIG. **2** and (a) of FIG. **3** illustrate the inhalation device **100**B in a state in which the opening **142** is closed by the shutter **50**. When the inhalation device **100**B is in the state illustrated in (a) of FIG. **3**, by the user sliding the shutter **50** with a finger, the shutter **50** is moved from above the opening **142** and the opening **142** is opened, as illustrated in (b) of FIG. **3**. In this way, by operating the shutter **50** to open the opening **142**, the user can insert the stick-type base material **150** into the opening **142**.

(2) Example of Inhalation Device with Panel Removed

[0079] FIG. **4** is a view illustrating the inhalation device **100**B in a state where the panel **10** is removed therefrom, and specifically illustrates an outer surface of the main body housing **20** which is exposed when the panel **10** is removed from the main body housing **20**. That is, the outer surface of the main body housing **20** illustrated in FIG. **4** is covered with the panel **10** in the state where the panel **10** is attached to the main body housing **20**.

[0080] As illustrated in FIG. **4**, for example, a magnet **21***a*, a magnet **21***b*, the operation button **22**, and a display window **23** are provided on the outer surface of the main body housing **20**. In addition to the above parts, for example, a sensor for detecting the attachment of the panel **10** to the main body housing **20** may be provided on the outer surface of the main body housing **20**.

[0081] The magnet **21***a* and the magnet **21***b* attract the panel **10** to the main body housing **20** by magnetic force (magnetic attraction). Accordingly, the panel **10** is held on the main body housing **20**. More specifically, magnets (not illustrated) corresponding to the magnet **21***a* and the magnet **21***b* are provided on an inner surface of the panel **10** facing the outer surface of the main body housing **20** when the panel **10** is attached to the main body housing **20**. Further, the panel **10** is held on the main body housing **20** by the magnets provided on the panel **10**, and the magnet **21***a* and the magnet **21***b*. Each of the magnet **21***a*, the magnet **21***b*, and the magnets of the panel **10** is preferably formed of, for example, a permanent magnet.

[0082] The operation button **22** is provided at a position corresponding to the operation part **19** of the panel **10** when the panel **10** is attached to the main body housing **20**. Accordingly, as described above, the user can operate the operation button **22** via the operation part **19** of the panel **10**.

[0083] The display window **23** is an opening aligned in position with the light emitting device **23***a* provided in the main body **30**, and transmits light from the light emitting device **23***a* to the display part **18** of the panel **10**. Accordingly, as described above, the user can visually recognize the light from the light emitting device **23***a* from the outer surface of the panel **10**.

[0084] The light emitting device **23***a* is an example of a light emitting unit that emits light, and for example, includes one or more light emitting elements. As the light emitting elements of the light emitting device **23***a*, for example, light emitting diodes (LEDs) may be adopted. As an example, in the present embodiment, the light emitting device **23***a* includes a plurality of LEDs having different emission colors, and is configured to emit light in a plurality of emission colors including blue, yellow, and red.

[0085] The light emitting device **23***a* notifies the user of predetermined information by emitting light in a predetermined light emitting mode. Here, the light emitting mode can be, for example, a light emission color, but is not limited thereto, and may be, for example, an intensity of lighting (in other words, brightness) or a lighting pattern (for example, blinking at a predetermined time interval).

[0086] Examples of the notification performed by the light emitting device **23***a* include a notification on operation information of the inhalation device **100**B indicating whether the power supply of the inhalation device **100**B is turned on (that is, in a power-on state). In the present embodiment, the light emitting device **23***a* may notify the user of information related to a height at which the inhalation device **100** of the present embodiment including the inhalation device **100**B is located (to be described later).

3. Operation Example of Inhalation Device

[0087] Next, an operation example of the inhalation device **100** of the present embodiment will be described. A control unit **116** (**116**A, **116**B) may operate the inhalation device **100** based on an input from the user. As an example, the control unit **116** causes the inhalation device **100** to generate the aerosol in response to an aerosol generation request from the user.

[0088] Here, the aerosol generation request can be, for example, an operation (hereinafter, also referred to as a "heating start operation") instructing a start of the heating. For example, the heating start operation can be press-down of the operation button **22**. As another example, the heating start operation may be an inhalation operation on the inhalation device **100**. The aerosol generation request is not limited to a direct operation on the inhalation device **100**, and may be reception of predetermined information from another device capable of communicating with the inhalation device **100**, such as a smartphone. The control unit **116** can detect the aerosol generation request based on, for example, information acquired by a sensor unit **112** or a communication unit **115**.

[0089] For example, in a case where the inhalation device **100** is the inhalation device **100**A illustrated in FIG. **1**A, when an inhalation operation on the inhalation device **100**A is detected based on the detection result of the puff sensor, the control unit **116**A supplies a predetermined amount of electric power to the heating unit **121**A to generate the aerosol. At this time, the electric power supplied to the heating unit **121**A is determined in advance by a manufacturer of the inhalation device **100**A in order to generate an appropriate amount of aerosol including an appropriate amount of flavor components, for example. Accordingly, it is possible to provide a high-quality smoking experience to the user.

[0090] Further, in a case where the inhalation device **100** is the inhalation device **100**B illustrated in FIG. **1**B, when the heating start operation (for example, the press-down of the operation button **22**) is detected, the control unit **116**B controls the temperature of the heating unit **121**B based on a heating profile prepared in advance to generate the aerosol. Here, the heating profile is information that defines a time-series transition of a target temperature that is a target value of the temperature of the heating unit **121**B, and is stored in advance in the storage unit **114**B, for example.

[0091] When the temperature control on the heating unit **121**B based on the heating profile (hereinafter also referred to as "heating control based on the heating profile") is described in detail, the control unit **116**B controls the temperature of the heating unit **121**B based on a deviation between the target temperature corresponding to an elapsed time from the start of the heating control based on the heating profile and an actual temperature of the heating unit **121**B (hereinafter also referred to as an "actual temperature"). More specifically, at this time, the control unit **116**B controls the temperature of the heating unit **121**B such that a time-series transition of the actual temperature of the heating unit **121**B is the same as the time-series transition of the target temperature defined in the heating profile.

[0092] The heating profile is typically designed to optimize a flavor experienced by the user when the user inhales the aerosol generated from the stick-type base material **150**. Thus, by controlling the temperature of the heating unit **121**B based on the heating profile, it is possible to optimize the flavor experienced by the user, and provide a high-quality smoking experience to the user.

[0093] In an inhaler that generates a substance to be inhaled by a user, such as the inhalation device **100**, in order to prevent an occurrence of inconvenience caused by misuse by a child (for example, an infant and a young child), a so-called "child resistance function (hereinafter also referred to as an "CR function")" may be implemented. It is conceivable that, as the CR function of such an inhaler, for example, when the substance to be inhaled is generated or the inhaler is powered on, a specific operation on the inhaler (for example, a so-called "long press" or a plurality of times of press-down of an operation button of the inhaler) may be required. Here, if the specific operation is complicated, the misuse by the child can be prevented, but it is troublesome for an adult who is a legitimate user of the inhaler.

[0094] It is desirable for the CR function in such an inhaler to be capable of preventing the occurrence of inconvenience caused by the misuse by the child, without compromising convenience for an adult who is a legitimate user of the inhaler as much as possible. However, a history of the technical development of the inhaler is still young, and there is a room for improvement in the CR function of the inhaler.

[0095] Therefore, the present embodiment is configured to focus on the fact that a height of a child of an age that may play around with the inhalation device **100** (for example, an infant and a young child who are three years old or younger. Hereinafter, also simply referred to as a "child") is lower than a height of an adult who may be a legitimate user of the inhalation device **100**, and a predetermined operation in the inhalation device **100** is restricted according to a height at which the inhalation device **100** is located. Accordingly, a predetermined operation in the inhalation device **100** can be prevented from being performed at a low position at which it is assumed that a child is playing around with the inhalation device **100**, and meanwhile the predetermined operation in the inhalation device **100** can be performed at a high position at which it is assumed that an adult is using the inhalation device **100**. Thus, a decrease in convenience for an adult who is a legitimate user of the inhalation device **100** can be prevented while preventing the occurrence of inconvenience caused by misuse by a child. Therefore, a performance of the CR function in the inhalation device **100** is improved, and marketability of the inhalation device **100** is improved. Hereinafter, the operation example of the inhalation device **100** will be described more specifically.

[0096] The control unit **116** of the inhalation device **100** acquires "height information", which is information indicating the height at which the inhalation device **100** is located, at a predetermined timing. Here, the height at which the inhalation device **100** is located is a distance in a vertical direction from a predetermined reference point to the inhalation device **100**. For example, in a case where the inhalation device **100** is located outdoors, a reference point serving as a reference of the height at which the inhalation device **100** is located (hereinafter, also simply referred to as the "reference point") can be a ground (that is, a ground surface) of a place where the user carrying the inhalation device **100** is located. Further, in a case where the inhalation device **100** is located indoors (also including a vehicle interior of an automobile or the like), the reference point can be a floor surface of a place where the user carrying the inhalation device **100** is located.

[0097] The reference point is not limited to the ground or the floor surface, and may be set by the user, for example. Accordingly, the user can set an appropriate position as the reference point in consideration of a place where the user is located. As an example, the reference point may be set by the user performing a predetermined operation on the inhalation device **100** or another device capable of communicating with the inhalation device **100**.

[0098] For example, the control unit **116** acquires the height information based on a detection result of the height sensor included in the sensor unit **112** (**112**A, **112**B).

[0099] For example, in a case where the atmospheric pressure sensor is adopted as the height sensor, the control unit **116** acquires the height information based on a detection result (that is, an atmospheric pressure) of the atmospheric pressure sensor. More specifically, in this case, for example, the inhalation device **100** sets, for the user, any position in the vertical direction in a vicinity of the floor surface (or the ground) of the place where the user is located as the reference point. Then, the inhalation device **100** uses the atmospheric pressure sensor to measure, for the user, an atmospheric pressure at the reference point and an atmospheric pressure at a position (for example, a position where an adult normally uses the inhalation device **100**) where the inhalation device **100** is lifted up to a certain extent so as to be away from the reference point.

[0100] Then, the control unit **116** derives elevations (that is, heights from a mean sea level) at the reference point and the lifted position from the atmospheric pressures of the reference point and the lifted position detected by the measurement, and acquires the height information in which an elevation difference between the elevations is set as the height at which the inhalation device **100** is located. Accordingly, when the height information is to be acquired based on the detection result of the atmospheric pressure sensor, the

height information indicating an appropriate value as the height at which the inhalation device **100** is located can also be acquired.

[0101] When the height sensor is a sensor capable of detecting the elevation (capable of outputting information indicating the elevation as a detection result), the control unit **116** may derive an elevation difference from the elevations at the reference point and the lifted position detected by the height sensor, and acquire the height information in which the elevation difference is set as the height at which the inhalation device **100** is located.

[0102] In a case where the distance measurement sensor is adopted as the height sensor, the control unit **116** acquires the height information based on a detection result of the distance measurement sensor. More specifically, in this case, for example, the inhalation device **100** uses the distance measurement sensor to measure, for the user, the distance from the floor surface (or the ground, that is, the reference point) of the place where the user is located to the inhalation device **100**. Then, the control unit **116** acquires the height information indicating the distance detected by the measurement as the height at which the inhalation device **100** is located. Accordingly, when the height information is to be acquired based on the detection result of the distance measurement sensor, the height information indicating an appropriate value as the height at which the inhalation device **100** is located can also be acquired.

[0103] Further, the control unit **116** may acquire the height information based on information received from another device (that is, the outside of the inhalation device **100**) capable of communicating with the inhalation device **100** via the communication unit **115** (**115**A, **115**B). As an example, the control unit **116** may acquire the height information based on information received from a wearable device (for example, a smart watch worn by the user) including the height sensor (for example, the atmospheric pressure sensor).

[0104] For example, when a predetermined operation is performed on the inhalation device **100**, the control unit **116** acquires the height information. Accordingly, as compared with a case where the height information is acquired periodically (for example, every minute) regardless of an operation of the user, it is possible to reduce the number of times of acquisition of the height information and prevent an increase in the power consumption of the inhalation device **100** associated with the acquisition of the height information.

[0105] The operation that triggers the acquisition of the height information can be, for example, an operation of sliding the shutter **50** to open the opening **142**. In the case where the inhalation device **100** is the inhalation device **100**A illustrated in FIG. **1**A, the operation that triggers the acquisition of the height information may be an operation of mounting the flavor imparting cartridge **130** to the inhalation device **100**A. As another example, in the case where the inhalation device **100** is the inhalation device **100**B illustrated in FIG. **1**B, the operation that triggers the acquisition of height information may be an operation of inserting the stick-type base material **150** into the opening **142**.

[0106] In the present embodiment, the operation that triggers the acquisition of the height information is the operation of sliding the shutter **50** to open the opening **142**, and when the operation is detected, the control unit **116** starts to acquire the height information. While the opening **142** is open, the control unit **116** acquires the height information at a predetermined cycle (for example, every 0.1 [s]). Accordingly, while the opening **142** is open, the control unit **116** can acquire the height information indicating, in real time, the height at which the inhalation device **100** is located.

[0107] It is conceivable that playing around with the inhalation device **100** may result in the operation that triggers the acquisition of the height information being repeated a plurality of times within a short period of time. In such a case, when the height information is acquired every time the operation that triggers the acquisition of the height information is performed, the number of times of acquisition of the height information is large, and the power consumption of the inhalation device **100** associated with the acquisition of the height information may increase.

[0108] Therefore, the control unit **116** may start the acquisition of the height information when a predetermined period of time (for example, 2 seconds) elapses since the operation that triggers the acquisition of the height information is performed. Accordingly, even if the operation that triggers the acquisition of the height information is repeated a plurality of times in a short period of time, an increase in the number of times of the acquisition of the height information can be prevented. Thus, an increase in the power consumption of the inhalation device **100** associated with the acquisition of the height information can be prevented. Here, the predetermined period of time can be appropriately determined by, for example, the manufacturer of the inhalation device **100**.

[0109] As an example, it is assumed that the operation that triggers the acquisition of the height information is, for example, the operation of sliding the shutter **50** to open the opening **142**. In this case, when the operation of sliding the shutter **50** to open the opening **142** is performed and a state where the opening **142** is open is maintained for a predetermined period of time, the control unit **116** may start the acquisition of the height information.

[0110] As another example, it is assumed that the operation that triggers the acquisition of the height information is the operation of mounting the flavor imparting cartridge **130**. In this case, when the operation of mounting the flavor imparting cartridge **130** is performed and a state where the flavor imparting cartridge **130** is mounted is maintained for a predetermined period of time, the control unit **116** may start the acquisition of the height information.

[0111] Further, as another example, it is assumed that the operation that triggers the acquisition of the height information is the operation of inserting the stick-type base material **150** into the opening **142**. In this case, when the operation of inserting the stick-type base material **150** into the opening **142** is performed and a state where the stick-type base material **150** is inserted is maintained for a predetermined period of time, the control unit **116** may start the acquisition of the height information.

[0112] When acquiring the height information, the control unit **116** determines whether the height at which the inhalation device **100** is located is less than a threshold based on the acquired height information. For example, every time the height information is acquired, the control unit **116** determines whether the height indicated by the acquired height information is less than the threshold. Here, the threshold is determined by, for example, the manufacturer or the like of

the inhalation device **100** in consideration of a typical height of a child of an age that may play around with the inhalation device **100**.

[0113] FIG. **5** is a diagram illustrating an example of a threshold as a condition for restricting the operation of the inhalation device **100**. In the present embodiment, it is assumed that a child who is a target of the CR function (that is, operation restriction) of the inhalation device **100** is an infant and a young child who are three years old or younger. An average height of a three-years-old child (that is, a child considered to have a highest average height among the children that are targets of the CR function of the inhalation device **100**) is about 100 [cm].

[0114] Therefore, as illustrated in FIG. **5**, in the present embodiment, a threshold that is a condition for restricting the operation of the inhalation device **100** is 130 [cm]. Accordingly, it is possible to set, as the threshold, a height that a young child having a height of about 100 [cm] does not reach even if the infant extends his/her hand upward. On the other hand, the threshold of 130 [cm] is lower than an average height of an adult (for example, an average height of an adult female). Accordingly, the threshold which is a condition for restricting the operation of the inhalation device **100** is prevented from being a height which it is difficult for an adult to reach. The threshold may be set by the user. In this way, the user can set a desired threshold in consideration of a height of the user or his/her child.

[0115] When it is determined whether the height at which the inhalation device **100** is located is less than the threshold, the control unit **116** restricts the predetermined operation in the inhalation device **100** based on a determination result. More specifically, when it is determined that the height at which the inhalation device **100** is located is equal to or greater than the threshold, the control unit **116** does not restrict the predetermined operation in the inhalation device **100**. That is, in this case, the control unit **116** may cause the inhalation device **100** to perform the predetermined operation, in response to an input from the user. Accordingly, an adult who can set the inhalation device **100** to a height equal to or greater than the threshold can release the restriction on the predetermined operation by performing a simple operation of lifting the inhalation device **100** to a height equal to or greater than the threshold and cause the inhalation device **100** to perform the predetermined operation as appropriate. Thus, the predetermined operation can be restricted while preventing a decrease in the convenience for an adult user.

[0116] On the other hand, when it is determined that the height at which the inhalation device **100** is located is less than the threshold, the control unit **116** restricts the predetermined operation in the inhalation device **100**. That is, in this case, even if there is an input from the user, the control unit **116** does not cause the inhalation device **100** to perform the predetermined operation. Accordingly, it is possible to prevent a predetermined operation from being performed for a child for whom it is difficult to set the inhalation device **100** to a height equal to or greater than the threshold. Thus, the occurrence of inconvenience caused by the misuse by the child can be prevented.

[0117] The predetermined operation restricted according to the height at which the inhalation device **100** is located includes, for example, generating the aerosol in response to the aerosol generation request from the user. Accordingly, the aerosol can be prevented from being generated for a child for whom it is difficult to set the inhalation device **100** to a height equal to or greater than the threshold.

[0118] More specifically, for example, in the case where the inhalation device **100** is the inhalation device **100**A illustrated in FIG. **1**A, the predetermined operation may be supplying the electric power to the heating unit **121**A in response to the inhalation operation on the inhalation device **100**A. Further, for example, in the case where the inhalation device **100** is the inhalation device **100**B illustrated in FIG. **1**B, the predetermined operation may be the heating control based on the heating profile in response to the heating start operation.

[0119] As another example, the predetermined operation may be an operation of turning on the power supply of the inhalation device **100** (that is, an operation of activating the inhalation device **100**) in response to a power-on operation (for example, the press-down of the operation button **22**) from the user. In addition to the above operations, any operation other than the operation related to the release of the operation restriction (that is, the CR function) in the inhalation device **100** may be the predetermined operation.

[0120] Further, when it is determined that the height at which the inhalation device **100** is located is equal to or greater than the threshold and there is the aerosol generation request after the predetermined operation is performed, the control unit **116** may cause the aerosol to be generated in response to the aerosol generation request. In this way, since it is necessary to perform a plurality of processes before generating the aerosol, the aerosol can be further prevented from being generated for the child.

[0121] As an example, when it is determined that the height at which the inhalation device **100** is located is equal to or greater than the threshold and the operation button **22** is long-pressed or pressed down a plurality of times, the control unit **116** may turn on the power supply of the inhalation device **100**. Thereafter, when the operation button **22** is further long-pressed or pressed down a plurality of times in a state where the power supply of the inhalation device **100** is turned on, the control unit **116** may cause the aerosol to be generated.

[0122] More specifically, for example, in the case where the inhalation device **100** is the inhalation device **100**A illustrated in FIG. **1**A, when it is determined that the height at which the inhalation device **100** is located is equal to or greater than the threshold and the operation button **22** is long-pressed or pressed down a plurality of times, the control unit **116**A may turn on the power supply of the inhalation device **100**A. Thereafter, when the operation button **22** is further long-pressed or pressed down a plurality of times in a state where the power supply of the inhalation device **100**A is turned on, the control unit **116** may supply electric power to the heating unit **121**A in response to the inhalation operation on the inhalation device **100**A.

[0123] More specifically, for example, in the case where the inhalation device **100** is the inhalation device **100**B illustrated in FIG. **1**B, when it is determined that the height at which the inhalation device **100** is located is equal to or greater than the threshold and the operation button **22** is long-pressed or pressed down a plurality of times, the control unit **116**B may turn on the power supply of the inhalation device **100**B. Thereafter, when the operation button **22** is further long-pressed or pressed down a plurality of times in a state where the power supply of the inhalation

device **100**B is turned on, the control unit **116** may start the heating control based on the heating profile.

[0124] As another example, for example, in the case where the inhalation device **100** is the inhalation device **100**B illustrated in FIG. **1**B, when it is determined that the height at which the inhalation device **100** is located is equal to or greater than the threshold and the operation button **22** is long-pressed or pressed down a plurality of times, the control unit **116**B may turn on the power supply of the inhalation device **100**B. Thereafter, when the stick-type base material **150** is inserted into the opening **142** in a state where the power supply of the inhalation device **100**B is turned on, the control unit **116** may start the heating control based on the heating profile.

[0125] Further, because the user is in the vehicle interior of an automobile, even if the user is an adult, it may be difficult to set the inhalation device **100** to a height equal to or greater than the threshold (for example, 130 [cm]). In such a case, when the inhalation device **100** cannot be used even though the user is an adult, the convenience of the inhalation device **100** may be decreased, and the marketability of the inhalation device **100** may be decreased.

[0126] Therefore, when an input of predetermined release information is received, the control unit **116** may disable the restriction on the predetermined operation in the inhalation device **100** for a certain period of time since the input of the release information is received. That is, when the input of the release information is received, the control unit **116** may cause the inhalation device **100** to perform the predetermined operation for a certain period of time regardless of the height at which the inhalation device **100** is located. Accordingly, even when it is difficult for the user to set the inhalation device **100** to a height equal to or greater than the threshold, the inhalation device **100** can be used by inputting the release information, and the decrease in the convenience of the inhalation device **100** can be prevented.

[0127] As an example, the release information may be input to the control unit **116** by the user performing a predetermined operation on the inhalation device **100** or another device capable of communicating with the inhalation device **100**. That is, the control unit **116** may acquire the release information via the sensor unit **112** or the communication unit **115**.

[0128] When the operation that triggers the input of the release information is a direct operation on the inhalation device **100**, the operation is preferably an operation complicated to some extent, such as a long press or a plurality of times of press down of the operation button **22**. In this way, the release information can be prevented from being unintentionally input due to playing around with the inhalation device **100**.

[0129] The release information may be input when a biometric authentication (for example, a fingerprint authentication) of the user is performed by the inhalation device **100** or another device capable of communicating with the inhalation device **100**. In this way, the release information can be more firmly prevented from being unintentionally input. Of course, instead of the biometric authentication, other types of user authentication such as a gesture authentication, a personal identification number (PIN) authentication, a password authentication, or a voice authentication may be adopted.

[0130] Further, for example, there is a user who performs so-called "chain smoking" by smoking using two or more stick-type base materials **150** continuously. When an operation for releasing the operation restriction (that is, the CR function) of the inhalation device **100** is performed for such a user every time the new stick-type base material **150** is used, time and efforts of the user at the time of the chain smoking may be increased, and the convenience of the inhalation device **100** may be decreased.

[0131] Therefore, when the predetermined operation is performed in the inhalation device **100**, the control unit **116** may disable the restriction on the predetermined operation in the inhalation device **100** for a certain period of time since the predetermined operation is completed. That is, when the predetermined operation is performed in the inhalation device **100**, the control unit **116** may cause the inhalation device **100** to perform the predetermined operation for a certain period of time regardless of the height at which the inhalation device **100** is located. In such a case, the certain period of time since the predetermined operation in the inhalation device **100** is completed (that is, a period of time during which the restriction on the predetermined operation is disabled) is hereinafter also referred to as a "restriction-disabled period of time". A length of the restriction-disabled period of time is determined in advance by, for example, the manufacturer of the inhalation device **100**.

[0132] As an example, when there is the aerosol generation request from the user within a certain period of time (that is, within the restriction-disabled period of time) after the heating control based on the heating profile is completed, the control unit **116** may start the heating control based on the heating profile again without requiring the operation for releasing the operation restriction in the inhalation device **100**. Accordingly, an increase in the time and efforts of the user at the time of the chain smoking is prevented, and the convenience of the inhalation device **100** is improved.

[0133] Here, a period from when the heating control based on the heating profile is started to when the heating control is completed is set as X [s] (for example, 300 [s]). Typically, the user who performs the chain smoking starts the heating control based on the heating profile again before 2×X [s] elapses, after the heating control based on the heating profile is completed. That is, if the heating control based on the heating profile is not started again before 2×X [s] elapses after the heating control based on the heating profile is completed, there is a high possibility that the user does not intend to perform the chain smoking.

[0134] Therefore, the restriction-disabled period of time may be a period of time having a length twice the period of time from when the heating control based on the heating profile is started to when the heating control is completed, that is, a period of time having a length of 2×X [s]. Accordingly, a period of time of an appropriate length as the restriction-disabled period of time can be set while preventing the increase in the time and efforts of the user at the time of chain smoking.

[0135] Further, it is also assumed that it is difficult for the user to understand how much the inhalation device **100** is to be lifted up to release the operation restriction in the inhalation device **100**.

[0136] Therefore, the control unit **116** may notify the user of information related to the height, at which the inhalation device **100** is located, via a notification unit **113** (**113**A, **113**B), based on the acquired height information. Accordingly, the user can grasp the height at which the inhalation

device **100** is located, and can get an idea of how much the inhalation device **100** is to be lifted up.

[0137] The information related to the height at which the inhalation device **100** is located can be, for example, information indicating the height at which the inhalation device **100** is located. In this case, the information related to the height at which the inhalation device **100** is located is not limited to information clearly indicating the height at which the inhalation device **100** is located as "OO [cm]", and may be, for example, information indicating the height at which the inhalation device **100** is located to an extent that the user can roughly grasp the height. Further, the information related to the height at which the inhalation device **100** is located may be, for example, information indicating the presence or absence of the operation restriction corresponding to a height at which the inhalation device **100** is currently located.

[0138] As an example, in the present embodiment, as described above, the notification unit **113** includes the light emitting device **23***a* configured to emit light in a plurality of emission colors including blue, yellow, and red. Then, the control unit **116** notifies the user of the information related to the height at which the inhalation device **100** is located by making the emission color of the light emitting device **23***a* different according to the height at which the inhalation device **100** is located. Accordingly, the height at which the inhalation device **100** is located can be notified to the user in an intuitive and easy-to-understand manner.

[0139] FIG. **6** is a diagram illustrating an example of a relationship between the height at which the inhalation device **100** is located and the emission colors of the light emitting device **23***a*. As illustrated in FIG. **6**, for example, when the height at which the inhalation device **100** is located is equal to or greater than 0 [cm] and less than 100 [cm], the control unit **116** causes the light emitting device **23***a* to emit red light.

[0140] For example, when the height at which the inhalation device **100** is located is equal to or greater than 100 [cm] and less than 130 [cm], the control unit **116** causes the light emitting device **23***a* to emit yellow light.

[0141] For example, when the height at which the inhalation device **100** is located is equal to or greater than 130 [cm], the control unit **116** causes the light emitting device **23***a* to emit blue light.

[0142] In this way, by making the emission color of the light emitting device **23***a* different according to the height at which the inhalation device **100** is located, the user can roughly grasp the height at which the inhalation device **100** is located according to the emission color of the light emitting device **23***a*.

[0143] More specifically, as indicated by a white arrow α in FIG. **6**, it is assumed that, for example, the inhalation device **100** is lifted up from a height of less than 100 [cm] at which smoking using the inhalation device **100** is impossible to a height of equal to or greater than 130 [cm] at which the smoking using the inhalation device **100** is possible. At this time, the emission color of the light emitting device **23***a* first changes from red to yellow, and then changes from yellow to blue. Thus, by lifting up the inhalation device **100** while confirming the emission color of the light emitting device **23***a*, the user can efficiently lift up the inhalation device **100** to a height at which the operation restriction in the inhalation device **100** is released.

[0144] In the example described above, the information related to the height at which the inhalation device **100** is located is notified to the user by making the emission color of the light emitting device **23***a* different according to the height at which the inhalation device **100** is located, but the present disclosure is not limited thereto. Hereinafter, examples of a case where the information related to the height at which the inhalation device **100** is located is notified to the user by methods other than the emission color of the light emitting device **23***a* will be described.

[0145] FIG. **7** is a diagram showing a modification of the light emitting device **23***a*. As illustrated in FIG. **7**, in the present example, the light emitting device **23***a* includes a first light emitting element **23***a*_**1**, a second light emitting element **23***a*_**2**, and a third light emitting element **23***a*_**3**. For example, LEDs may be adopted as the first light emitting element **23***a*_**1**, the second light emitting element **23***a*_**2**, and the third light emitting element **23***a*_**3**. Emission colors of the first light emitting element **23***a*_**1**, the second light emitting element **23***a*_**2**, and the third light emitting element **23***a*_**3** may be the same or different.

[0146] In the present example, for example, the control unit **116** notifies the user of the information related to the height at which the inhalation device **100** is located, by making the number of light emitting elements that emit light among the light emitting elements provided in the light emitting device **23***a* different according to the height at which the inhalation device **100** is located. Accordingly, the height at which the inhalation device **100** is located can be notified to the user in an intuitive and easy-to-understand manner.

[0147] FIG. **8** is a diagram illustrating an example of a relationship between the height at which the inhalation device **100** is located and the number of light emitting elements that emit light. As illustrated in FIG. **8**, for example, when the height at which the inhalation device **100** is located is equal to or greater than 0 [cm] and less than 100 [cm], the control unit **116** causes one light emitting element (for example, the first light emitting element **23***a*_**1**) among the light emitting elements provided in the light emitting device **23***a* to emit light.

[0148] Further, for example, when the height at which the inhalation device **100** is located is equal to or greater than 100 [cm] and less than 130 [cm], the control unit **116** causes two light emitting elements (for example, the first light emitting element **23***a*_**1** and the second light emitting element **23***a*_**2**) among the light emitting elements provided in the light emitting device **23***a* to emit light.

[0149] For example, when the height at which the inhalation device **100** is located is equal to or greater than 130 [cm], the control unit **116** causes three light emitting elements (that is, the first light emitting element **23***a*_**1**, the second light emitting element **23***a*_**2**, and the third light emitting element **23***a*_**3**) among the light emitting elements provided in the light emitting device **23***a* to emit light.

[0150] In this way, by making the number of light emitting elements that emit light among the light emitting elements provided in the light emitting device **23***a* different according to the height at which the inhalation device **100** is located, the user can roughly grasp the height at which the inhalation device **100** is located according to the number of light emitting elements that emit light.

[0151] More specifically, as indicated by a white arrow β in FIG. **8**, it is assumed that, for example, the inhalation

device **100** is lifted up from a height of less than 100 [cm] at which the smoking using the inhalation device **100** is impossible to a height of equal to or greater than 130 [cm] at which the smoking using the inhalation device **100** is possible. At this time, among the light emitting elements provided in the light emitting device **23***a*, the number of light emitting elements that emit light is first changed from one to two, and then changed from two to three. Thus, by lifting up the inhalation device **100** while confirming the number of light emitting elements that emit light, the user can efficiently lift up the inhalation device **100** to the height at which the operation restriction in the inhalation device **100** is released.

[0152] Further, the control unit **116** may notify the user of the information related to the height at which the inhalation device **100** is located by making the light emitting element that emits light among the light emitting elements provided in the light emitting device **23***a* different according to the height at which the inhalation device **100** is located. In this case, the height at which the inhalation device **100** is located can also be notified to the user in an intuitive and easy-to-understand manner.

[0153] More specifically, for example, when the height at which the inhalation device **100** is located is equal to or greater than 0 [cm] and less than 100 [cm], the control unit **116** causes the first light emitting element **23***a*_**1** to emit light.

[0154] When the height at which the inhalation device **100** is located is equal to or greater than 100 [cm] and less than 130 [cm], the control unit **116** causes the second light emitting element **23***a*_**2** to emit light.

[0155] When the height at which the inhalation device **100** is located is equal to or greater than 130 [cm], the control unit **116** causes the third light emitting element **23***a*_**3** to emit light.

[0156] In this way, by making the light emitting element that emits light among the light emitting elements provided in the light emitting device **23***a* different according to the height at which the inhalation device **100** is located, the user can roughly grasp the height at which the inhalation device **100** is located according to the light emitting element that emits light. Thus, by lifting up the inhalation device **100** while confirming the light emitting element that emits light, the user can efficiently lift up the inhalation device **100** to the height at which the operation restriction in the inhalation device **100** is released.

[0157] Further, when the notification unit **113** includes a display unit that displays an image, the control unit **116** may notify the user of the information related to the height at which the inhalation device **100** is located, by making a display mode of the display unit different according to the height at which the inhalation device **100** is located. In this case, the height at which the inhalation device **100** is located can also be notified to the user in an intuitive and easy-to-understand manner. Hereinafter, an example will be described in which the user is notified of the information related to the height at which the inhalation device **100** is located via a display device **23***b* as an example of the display unit provided in the notification unit **113**.

[0158] FIG. **9** is a diagram illustrating an example of the display device **23***b*. The display device **23***b* is provided at a position visible to the user in the inhalation device **100**. As the display device **23***b*, for example, a liquid crystal display or an organic electro-luminescence (EL) display may be adopted.

[0159] In the present example, the display device **23***b* displays, for example, an indicator I as an image for notifying the user of the information related to the height at which the inhalation device **100** is located. The indicator I indicates the height at which the inhalation device **100** is located in three stages.

[0160] FIG. **10** is a diagram illustrating an example of a relationship between the height at which the inhalation device **100** is located and a display mode of the indicator I of the display device **23***b*. As illustrated in FIG. **10**, for example, when the height at which the inhalation device **100** is located is equal to or greater than 0 [cm] and less than 100 [cm], the control unit **116** displays the indicator I of the display device **23***b* in one-stage display.

[0161] For example, when the height at which the inhalation device **100** is located is equal to or greater than 100 [cm] and less than 130 [cm], the control unit **116** displays the indicator I of the display device **23***b* in two-stage display.

[0162] For example, when the height at which the inhalation device **100** is equal to or greater than 130 [cm], the control unit **116** displays the indicator I of the display device **23***b* in three-stage display.

[0163] In this way, by making a display mode of the display device **23***b* (the display mode of the indicator I in the example described here) different according to the height at which the inhalation device **100** is located, the user can grasp the height at which the inhalation device **100** is located according to the display mode of the display device **23***b*.

[0164] More specifically, as indicated by a white arrow γ in FIG. **10**, it is assumed that, for example, the inhalation device **100** is lifted up from a height of less than 100 [cm] at which the smoking using the inhalation device **100** is impossible to a height of equal to or greater than 130 [cm] at which the smoking using the inhalation device **100** is possible. At this time, the indicator I of the display device **23***b* first changes from the one-step display to the two-stage display, and then changes from the two-stage display to the three-stage display. Thus, by lifting up the inhalation device **100** while confirming the indicator I of the display device **23***b*, the user can efficiently lift up the inhalation device **100** to the height at which the operation restriction in the inhalation device **100** is released.

[0165] In each of the examples described above, the height at which the inhalation device **100** is located is notified to the user in three stages, but the present disclosure is not limited thereto. For example, the height at which the inhalation device **100** is located may be notified to the user in two stages including whether the height is less than 130 [cm] which is a threshold and whether the height is equal to or greater than 130 [cm]. Alternatively, the height at which the inhalation device **100** is located may be notified to the user in four or more stages.

[0166] When the notification unit **113** includes a vibration device (so-called vibrator) that vibrates, the control unit **116** may notify the user of the information related to the height at which the inhalation device **100** is located, by a vibration mode of the vibration device. In this case, the number of times of vibration or a vibration pattern of the vibration device may be changed according to the height at which the inhalation device **100** is located.

[0167] Further, when the notification unit **113** includes a sound output device (for example, a speaker) that outputs sound, the control unit **116** may notify the user of the information related to the height at which the inhalation device **100** is located, by the sound output from the sound output device.

4. Example of Processing Performed by Control Unit

[0168] Next, an example of processing performed by the control unit **116** will be described. Here, as an example, the processing performed by the control unit **116** when the inhalation device **100** is the inhalation device **100**B illustrated in FIG. **1**B will be described.

[0169] FIG. **11** is a flowchart (part **1**) illustrating an example of the processing performed by the control unit **116**. FIG. **12** is a flowchart (part **2**) illustrating an example of the processing performed by the control unit **116**.

[0170] As illustrated in FIG. **11**, the control unit **116** first determines whether the aerosol generation request is received within the restriction-disabled period of time (step S**1**). When it is determined that the aerosol generation request is received within the restriction-disabled period of time (step S**1**: Yes), the control unit **116** proceeds to processing of step S**7**.

[0171] When it is determined that the aerosol generation request is not received within the restriction-disabled period of time (step S**1**: No), the control unit **116** determines whether the input of the release information is received (step S**2**). When it is determined that the input of the release information is received (step S**2**: Yes), the control unit **116** proceeds to the processing of step S**7**.

[0172] When it is determined that the input of the release information is not received (step S**2**: No), the control unit **116** determines whether the operation that triggers the acquisition of the height information is performed (step S**3**). When it is determined that there is no operation that triggers the acquisition of the height information (step S**3**: No), the control unit **116** returns to the processing of step S**1**.

[0173] When it is determined that the operation that triggers the acquisition of the height information is performed (step S**3**: Yes), the control unit **116** starts the acquisition of the height information and notifies the user of the information related to the height at which the inhalation device **100** is located via the notification unit **113** based on the acquired height information (step S**4**).

[0174] More specifically, in the present embodiment, as described above, when an operation of sliding the shutter **50** as the operation that triggers the acquisition of the height information is performed, the control unit **116** starts the acquisition of the height information. Then, while the opening **142** is open, the control unit **116** acquires the height information at a predetermined cycle (that is, in real time). Further, every time the height information is acquired, the control unit **116** notifies, by the light emitting device **23***a* or the like, the user of the information related to the height indicated by the acquired height information (that is, the height at which the inhalation device **100** is currently located).

[0175] Further, every time the height information is acquired, the control unit **116** determines whether the height indicated by the acquired height information is less than the threshold (step S**5**). When it is determined that the height indicated by the acquired height information is less than the threshold (step S**5**: Yes), the control unit **116** performs the processing of step S**5** every time the height information is acquired while continuing the acquisition of the height information at a predetermined cycle and the notification of the information related to the height at which the inhalation device **100** is located until a timeout occurs (step S**6**: No). When the timeout occurs (step S**6**: Yes), the control unit **116** ends the series of processing illustrated in FIGS. **11** and **12**.

[0176] In step S**6**, the control unit **116** may determine the timeout, for example, under a condition that a predetermined period of time (for example, 180 [s]) elapses since the operation that triggers the acquisition of the height information is performed.

[0177] When it is determined that the height indicated by the acquired height information is equal to or greater than the threshold (step S**5**: No), the control unit **116** determines whether a power-on operation is performed (step S**7**). When it is determined that no power-on operation is performed (step S**7**: No), the control unit **116** repeats the processing of step S**7** until a timeout occurs (step S**8**: No). When the timeout occurs (step S**8**: Yes), the control unit **116** ends the series of processing illustrated in FIGS. **11** and **12**.

[0178] In step S**8**, as in step S**6**, for example, the control unit **116** may determine the timeout under a condition that a predetermined period of time elapses since the operation that triggers the acquisition of the height information is performed.

[0179] When it is determined the power-on operation is performed (step S**7**: Yes), the control unit **116** turns on the power supply of the inhalation device **100** (step S**9**). Then, the control unit **116** determines whether the heating start operation is performed (step S**10**). When it is determined that no heating start operation is performed (step S**10**: No), the control unit **116** repeats the processing of step S**10** until a timeout occurs (step S**11**: No). When the timeout occurs (step S**11**: Yes), the control unit **116** ends the series of processing illustrated in FIGS. **11** and **12**.

[0180] In step S**11**, as in steps S**6** and S**8**, for example, the control unit **116** may determine the timeout under a condition that a predetermined period of time elapses since the operation that triggers the acquisition of the height information is performed.

[0181] When it is determined that the heating start operation is performed (step S**10**: Yes), as illustrated in FIG. **12**, the control unit **116** starts the heating control based on the heating profile (step S**12**). Then, the control unit **116** waits for the completion of the heating control (step S**13**: No), and when the heating control is completed (step S**13**: Yes), the control unit **116** sets a certain period of time after the completion of the heating control as the restriction-disabled period of time (step S**14**), and ends the series of processing illustrated in FIGS. **11** and **12**.

[0182] As described above, according to the inhalation device **100**, a predetermined operation (for example, generating the aerosol) in the inhalation device **100** is restricted according to the height at which the inhalation device **100** is located. Accordingly, the predetermined operation in the inhalation device **100** can be prevented from being performed at a low position at which it is assumed that a child is playing around with the inhalation device **100**, and meanwhile the predetermined operation in the inhalation device **100** (that is, normal use of the inhalation device **100**) can be performed at a high position at which it is assumed that an adult who is a legitimate user is using the inhalation

device **100**. Thus, the decrease in convenience for an adult who is a legitimate user of the inhalation device **100** can be prevented while preventing the occurrence of inconvenience caused by the misuse by a child. That is, according to the inhalation device **100**, an appropriate CR function can be provided for the user, and the marketability of the inhalation device **100** can be improved.

[0183] A control method of the inhalation device **100** described in the above embodiment can be achieved by executing a program prepared in advance on a computer (a processor). The program is stored in a computer-readable storage medium and is executed by being read from the storage medium. Further, the program may be provided in a form of being stored in a non-transitory storage medium such as a flash memory, and may be provided via a network such as the Internet. Although the computer that executes the program can be, for example, a component provided in the inhalation device **100** (for example, the CPU of the inhalation device **100**), but is not limited thereto, and may be a component provided in another device (for example, a smartphone or a server) capable of communicating with the inhalation device **100**.

[0184] Although the embodiments of the present invention have been described above with reference to the accompanying drawings, it is needless to say that the present invention is not limited to such an embodiment. It is apparent to a person skilled in the art that various changes and modifications may be conceived within the scope described in the claims, and it is understood that the changes and the modifications naturally fall within the technical scope of the present invention. In addition, the constituent components described in the above embodiments may be optionally combined without departing from the spirit of the invention.

[0185] In the present description or the like, at least the following matters are described. In parentheses, corresponding components and the like in the above-described embodiments are illustrated as an example, and the present invention is not limited thereto.

[0186] (1) An inhalation device (inhalation device **100**, **100**A, **100**B) that generates an aerosol from a base material (cartridge **120**, flavor imparting cartridge **130**, stick-type base material **150**) including an aerosol source, the inhalation device including:

[0187] a control unit (control unit **116**, **116**A, **116**B) configured to control an operation of the inhalation device, in which

[0188] the control unit

[0189] acquires height information indicating a height at which the inhalation device is located,

[0190] determines whether the height is less than a threshold based on the height information, and

[0191] restricts a predetermined operation in the inhalation device when it is determined that the height is less than the threshold.

[0192] According to (1), since the predetermined operation in the inhalation device is restricted when it is determined that the height at which the inhalation device is located is less than the threshold, the predetermined operation can be prevented from being performed for a child for whom it is difficult to set the inhalation device to a height equal to or greater than the threshold. Thus, an occurrence of inconvenience caused by misuse by a child can be prevented.

[0193] (2) The inhalation device according to (1), further including:

[0194] a heating unit (heating unit **121**, **121**B) configured to heat the base material to generate the aerosol, in which

[0195] in response to an aerosol generation request from a user, the control unit causes the inhalation device to generate the aerosol, by controlling a temperature of the heating unit based on a heating profile defining a time-series transition of a target temperature which is a target value of the temperature of the heating unit, and

[0196] the predetermined operation includes generating the aerosol in response to the aerosol generation request.

[0197] According to (2), since the predetermined operation restricted according to the height at which the inhalation device is located includes generating the aerosol, the aerosol can be prevented from being generated for the child for whom it is difficult to set the inhalation device to a height equal to or greater than the threshold.

[0198] (3) The inhalation device according to (1), further including:

[0199] a heating unit (heating unit **121**, **121**A) configured to, when supplied with electric power, heat the base material to generate the aerosol, in which

[0200] in response to an aerosol generation request from a user, the control unit causes the inhalation device to generate the aerosol, by supplying a predetermined amount of electric power to the heating unit, and

[0201] the predetermined operation includes generating the aerosol in response to the aerosol generation request.

[0202] According to (3), since the predetermined operation restricted according to the height at which the inhalation device is located includes generating the aerosol, the aerosol can be prevented from being generated for the child for whom it is difficult to set the inhalation device to a height equal to or greater than the threshold.

[0203] (4) The inhalation device according to (2) or (3), in which

[0204] when it is determined that the height is equal to or greater than the threshold and there is the aerosol generation request after the predetermined operation is performed, the control unit causes the aerosol to be generated in response to the aerosol generation request.

[0205] According to (4), since it is necessary to perform a plurality of processes before generating the aerosol, the aerosol can be further prevented from being generated for the child.

[0206] (5) The inhalation device according to any one of (1) to (4), further including:

[0207] a notification unit (notification unit **113**, **113**A, **113**B) configured to notify a user of predetermined information, in which

[0208] the control unit further notifies the user of information related to the height via the notification unit based on the height information.

[0209] According to (5), since the information related to the height at which the inhalation device is located can be notified to the user via the notification unit, the user can grasp the height at which the inhalation device is located.

[0210] (6) The inhalation device according to (5), in which

[0211] the notification unit includes a light emitting unit (light emitting device **23***a*) configured to emit light, and

[0212] the control unit notifies the user of the information related to the height by making a light emitting mode of the light emitting unit different according to the height.

[0213] According to (6), since the light emitting mode of the light emitting unit is made different according to the height at which the inhalation device is located, the height at which the inhalation device is located can be notified to the user in an intuitive and easy-to-understand manner.

[0214] (7) The inhalation device according to (6), in which

[0215] the light emitting unit is configured to emit light in a plurality of emission colors, and

[0216] the control unit makes the emission colors of the light emitting unit different according to the height.

[0217] According to (7), since the emission colors of the light emitting unit are made different according to the height at which the inhalation device is located, the height at which the inhalation device is located can be notified to the user in an intuitive and easy-to-understand manner.

[0218] (8) The inhalation device according to (6), in which

[0219] the light emitting unit includes a plurality of light emitting elements (first light emitting element **23***a*_**1**, second light emitting element **23***a*_**2**, third light emitting element **23***a*_**3**), and

[0220] the control unit makes the light emitting element that emits light or the number of light emitting elements that emit light among the plurality of light emitting elements different according to the height.

[0221] According to (8), since the light emitting element that emits light or the number of light emitting elements that emit light among the plurality of light emitting elements provided in the light emitting unit is made different according to the height at which the inhalation device is located, the height at which the inhalation device is located can be notified to the user in an intuitive and easy-to-understand manner.

[0222] (9) The inhalation device according to (5), in which

[0223] the notification unit includes a display unit (display device **23***b*) configured to display an image, and

[0224] the control unit notifies the user of the information related to the height by making a display mode of the display unit different according to the height.

[0225] According to (9), since the display mode of the display unit is made different according to the height at which the inhalation device is located, the height at which the inhalation device is located can be notified to the user in an intuitive and easy-to-understand manner.

[0226] (10) The inhalation device according to any one of (1) to (9), in which

[0227] the control unit acquires the height information when an operation that triggers the acquisition of the height information is performed.

[0228] According to (10), as compared with a case where, in order to acquire the height information when the operation that triggers the acquisition of the height information is performed, the height information is acquired periodically regardless of an operation of the user, it is possible to reduce the number of times of acquisition of the height information and prevent an increase in power consumption of the inhalation device associated with the acquisition of the height information.

[0229] (11) The inhalation device according to (10), in which

[0230] the control unit starts the acquisition of the height information when a predetermined period of time elapses since the operation that triggers the acquisition of the height information is performed.

[0231] According to (11), since the acquisition of the height information is started when a predetermined period of time elapses since the operation that triggers the acquisition of the height information is performed, even if the operation that triggers the acquisition of the height information is repeated a plurality of times in a short period of time, an increase in the number of times of the acquisition of the height information can be prevented.

[0232] (12) The inhalation device according to any one of (1) to (11), in which

[0233] when an input of predetermined release information is received, the control unit disables the restriction on the predetermined operation for a certain period of time since the input of the release information is received.

[0234] According to (12), even when it is difficult for the user to set the inhalation device to a height equal to or greater than the threshold, the inhalation device can be used by inputting the release information, and the decrease in convenience of the inhalation device can be prevented.

[0235] (13) The inhalation device according to any one of (1) to (12), in which

[0236] when the predetermined operation is performed, the control unit disables the restriction on the predetermined operation for a certain period of time since the predetermined operation is completed.

[0237] According to (13), as compared with a case where an operation for releasing the restriction on the predetermined operation is required for each predetermined operation, an increase in time and efforts of the user can be prevented.

[0238] (14) The inhalation device according to (13), further including:

[0239] a heating unit configured to heat the base material to generate the aerosol, in which

[0240] in response to an aerosol generation request from a user, the control unit causes the inhalation device to generate the aerosol, by controlling a temperature of the heating unit based on a heating profile defining a time-series transition of a target temperature which is a target value of the temperature of the heating unit,

[0241] the predetermined operation includes generating the aerosol in response to the aerosol generation request,

[0242] when the aerosol is generated, the control unit disables the restriction on the predetermined operation for the certain period of time since the generation of the aerosol is completed, and

[0243] the certain period of time is twice as long as a period of time from when the heating control based on the heating profile is started to when the heating control is completed.

[0244] According to (14), a period of time of an appropriate length as a period of time for disabling the restriction on the predetermined operation can be set while preventing the increase in the time and efforts of the user at the time of chain smoking.

[0245] (15) The inhalation device according to any one of (1) to (14), in which

[0246] the control unit acquires the height information indicating a distance in a vertical direction from a predetermined reference point to the inhalation device as the height, and

[0247] the reference point is able to be set by a user.

[0248] According to (15), an appropriate position can be set as the reference point.

[0249] (16) A control method including:

[0250] a computer (control unit **116**, **116**A, **116**B), for controlling an operation of an inhalation device (inhalation device **100**, **100**A, **100**B) that generates an aerosol from a base material (cartridge **120**, flavor imparting cartridge **130**, stick-type base material **150**) including an aerosol source, performing the following processing:

[0251] acquiring height information indicating a height at which the inhalation device is located;

[0252] determining whether the height is less than a threshold based on the height information; and

[0253] restricting a predetermined operation in the inhalation device when it is determined that the height is less than the threshold.

[0254] According to (16), since the predetermined operation in the inhalation device is restricted when it is determined that the height at which the inhalation device is located is less than the threshold, the predetermined operation can be prevented from being performed for a child for whom it is difficult to set the inhalation device to a height equal to or greater than the threshold. Thus, the occurrence of inconvenience caused by the misuse by a child can be prevented.

[0255] (17) A non-transitory computer-readable storage medium storing a program causing a computer (control unit **116**, **116**A, **116**B), for controlling an operation of an inhalation device (inhalation device **100**, **100**A, **100**B) that generates an aerosol from a base material (cartridge **120**, flavor imparting cartridge **130**, stick-type base material **150**) including an aerosol source, to perform the following processing:

[0256] acquiring height information indicating a height at which the inhalation device is located;

[0257] determining whether the height is less than a threshold based on the height information; and

[0258] restricting a predetermined operation in the inhalation device when it is determined that the height is less than the threshold.

[0259] According to (17), since the predetermined operation in the inhalation device is restricted when it is determined that the height at which the inhalation device is located is less than the threshold, the predetermined operation can be prevented from being performed for a child for whom it is difficult to set the inhalation device to a height equal to or greater than the threshold. Thus, the occurrence of inconvenience caused by the misuse by a child can be prevented.

What is claimed is:

1. An inhalation device that generates an aerosol from a base material including an aerosol source, the inhalation device comprising:

a control unit configured to control an operation of the inhalation device, wherein

the control unit

acquires height information indicating a height at which the inhalation device is located,

determines whether the height is less than a threshold based on the height information, and

restricts a predetermined operation in the inhalation device when it is determined that the height is less than the threshold.

2. The inhalation device according to claim **1**, further comprising:

a heating unit configured to heat the base material to generate the aerosol, wherein

in response to an aerosol generation request from a user, the control unit causes the inhalation device to generate the aerosol, by controlling a temperature of the heating unit based on a heating profile defining a time-series transition of a target temperature which is a target value of the temperature of the heating unit, and

the predetermined operation includes generating the aerosol in response to the aerosol generation request.

3. The inhalation device according to claim **1**, further comprising:

a heating unit configured to, when supplied with electric power, heat the base material to generate the aerosol, wherein

in response to an aerosol generation request from a user, the control unit causes the inhalation device to generate the aerosol, by supplying a predetermined amount of electric power to the heating unit, and

the predetermined operation includes generating the aerosol in response to the aerosol generation request.

4. The inhalation device according to claim **2**, wherein

when it is determined that the height is equal to or greater than the threshold and there is the aerosol generation request after the predetermined operation is performed, the control unit causes the aerosol to be generated in response to the aerosol generation request.

5. The inhalation device according to claim **1**, further comprising:

a notification unit configured to notify a user of predetermined information, wherein

the control unit further notifies the user of information related to the height via the notification unit based on the height information.

6. The inhalation device according to claim **5**, wherein

the notification unit includes a light emitting unit configured to emit light, and

the control unit notifies the user of the information related to the height by making a light emitting mode of the light emitting unit different according to the height.

7. The inhalation device according to claim **6**, wherein

the light emitting unit is configured to emit light in a plurality of emission colors, and

the control unit makes the emission colors of the light emitting unit different according to the height.

8. The inhalation device according to claim **6**, wherein

the light emitting unit includes a plurality of light emitting elements, and

the control unit makes the light emitting element that emits light or the number of light emitting elements that emit light among the plurality of light emitting elements different according to the height.

9. The inhalation device according to claim **5**, wherein

the notification unit includes a display unit configured to display an image, and

the control unit notifies the user of the information related to the height by making a display mode of the display unit different according to the height.

10. The inhalation device according to claim **1**, wherein

the control unit acquires the height information when an operation that triggers the acquisition of the height information is performed.

11. The inhalation device according to claim **10**, wherein

the control unit starts the acquisition of the height information when a predetermined period of time elapses since the operation that triggers the acquisition of the height information is performed.

12. The inhalation device according to claim **1**, wherein

when an input of predetermined release information is received, the control unit disables the restriction on the predetermined operation for a certain period of time since the input of the release information is received.

13. The inhalation device according to claim **1**, wherein

when the predetermined operation is performed, the control unit disables the restriction on the predetermined operation for a certain period of time since the predetermined operation is completed.

14. A control method comprising:

a computer, for controlling an operation of an inhalation device that generates an aerosol from a base material including an aerosol source, performing the following processing:

acquiring height information indicating a height at which the inhalation device is located;

determining whether the height is less than a threshold based on the height information; and

restricting a predetermined operation in the inhalation device when it is determined that the height is less than the threshold.

15. A non-transitory computer-readable storage medium storing a program causing a computer, for controlling an operation of an inhalation device that generates an aerosol from a base material including an aerosol source, to perform the following processing:

acquiring height information indicating a height at which the inhalation device is located;

determining whether the height is less than a threshold based on the height information; and

restricting a predetermined operation in the inhalation device when it is determined that the height is less than the threshold.

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