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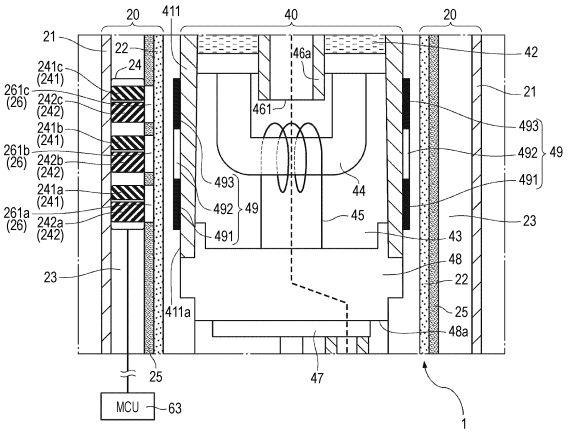
(54) AEROSOL GENERATION DEVICE

(57) In the present invention, an aerosol inhaler (1) comprises a cartridge (40) that can be attached and detached, a power supply unit (10) having an MCU 63, a cartridge information reading device (24), an inner peripheral wall (22) provided between the cartridge information reading device (24) and the cartridge (40), and a light-shielding member (25) provided between the cartridge information reading device (24) and the cartridge (40). An information display unit (49) that is segmented into a plurality of display regions is formed on the cartridge (40). The MCU 63 acquires information relating to the cartridge (40) on the basis of information relating to light that is received by the cartridge information reading device (24) and that is reflected by each of the display regions in the information display unit (49), the MCU 63 being capable of executing a cartridge information acquisition process.

FIG. 5



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Description

TECHNICAL FIELD

[0001] The present invention relates to an aerosol generating device.

BACKGROUND ART

[0002] Patent Literature 1 discloses an aerosol delivery system (aerosol generating device) that generates aerosol by heating an aerosol source to vaporize and/or atomize the aerosol source. In the aerosol delivery system of Patent Literature 1, the generated aerosol flows through a second aerosol generating device (accommodation chamber) in which an aerosol generating element (flavor source) is accommodated, whereby a flavor component contained in the flavor source is added to the aerosol, and a user can suction the aerosol containing the flavor component.

[0003] In addition, Patent Literature 1 discloses that menthol may be contained in both an aerosol precursor composition (aerosol source) of a reservoir substrate and the aerosol generating element (flavor source) of the second aerosol generating device (accommodation chamber).

[0004] Similar to a smoker of cigarette or the like, a desired fragrance inhaling taste depending on the user varies also for the user of the aerosol generating device. For example, users of the aerosol generating device include those who prefer a menthol flavor and those who prefer a regular flavor which does not contain the menthol flavor. In order to satisfy demands of respective users having different preferences, it is desirable that the aerosol generating device is capable of selecting a plurality of types of aerosol sources and/or flavor sources, and is capable of generating aerosol to which a plurality of types of aroma is added. Further, in order to provide the user with an optimum fragrance inhaling taste, it is preferable to separately set a mode for controlling discharge to a load which heats the aerosol source and/or the flavor source according to the selected aerosol source and/or flavor source.

[0005] Therefore, Patent Literature 2 discloses an electric-heating-type smoking system (aerosol generating device) that includes a detector capable of identifying a specific smoking article based on identification information printed on the smoking article, and establishes a heating protocol based on the specific smoking article identified by the detector.

CITATION LIST

PATENT LITERATURE

[0006]

Patent Literature 1: JP2019-150031A
Patent Literature 2: JP2012-513750A

SUMMARY OF INVENTION

TECHNICAL PROBLEM

[0007] On the other hand, Patent Literature 2 does not specifically disclose how the detector is attached to the electric-heating-type smoking system (aerosol generating device). However, when the detector is actually to be attached to the electric-heating-type smoking system (aerosol generating device), it is desirable that the detector is attached such that the user does not suck a component such as solder, an adhesive, or the like used for fixing the detector when the user performs a suction operation.

[0008] The present invention provides an aerosol generating device capable of attaching a cartridge information reading device capable of acquiring information on a mounted cartridge such that a user does not suck a component such as solder, an adhesive, or the like used for fixing.

SOLUTION TO PROBLEM

[0009] The present invention relates to an aerosol generating device including:

an attachable and detachable cartridge that stores an aerosol source; and
a power supply unit including a power supply and a controller, in which:

the cartridge is formed with an information display unit partitioned into a plurality of display areas;

the aerosol generating device further includes:

a cartridge information reading device capable of projecting light toward the cartridge and receiving light reflected by the cartridge;
a partition wall provided between the cartridge information reading device and the cartridge and allowing light to be transmitted; and
a light shielding member provided between the cartridge information reading device and the cartridge, and formed with light transmitting portions which allow light to be transmitted;

the cartridge information reading device is configured to receive light reflected by each of the display areas of the information display unit from the light transmitting portions; and
the controller is configured to execute a cartridge information acquisition process of acquiring information on the cartridge based on information on the light reflected by each of the display areas of the information display unit, which is received by the cartridge information reading device.

ADVANTAGEOUS EFFECTS OF INVENTION

[0010] According to the present invention, the aerosol generating device can attach a cartridge information reading device capable of acquiring information on a mounted cartridge such that a user does not suck a component such as solder, an adhesive, or the like used for fixing.

BRIEF DESCRIPTION OF DRAWINGS

[0011]

[Fig. 1] Fig. 1 is a perspective view schematically illustrating a schematic configuration of an aerosol suction device according to a first embodiment of the present invention.
[Fig. 2] Fig. 2 is another perspective view of the aerosol suction device in Fig. 1.
[Fig. 3] Fig. 3 is a cross-sectional view of the aerosol suction device in Fig. 1.
[Fig. 4] Fig. 4 is a perspective view of a power supply unit in the aerosol suction device in Fig. 1.
[Fig. 5] Fig. 5 is an enlarged view of a main part of an area A in Fig. 3, and is a view illustrating a periphery of a cartridge information reading device in the aerosol suction device in Fig. 1.
[Fig. 6] Fig. 6 is a schematic view illustrating a hardware configuration of the aerosol suction device in Fig. 1.
[Fig. 7] Fig. 7 is a view illustrating a specific example of the power supply unit illustrated in Fig. 6.
[Fig. 8] Fig. 8 is a flowchart illustrating an operation of the aerosol suction device in Fig. 1 (part 1: power-on control).
[Fig. 9] Fig. 9 is a flowchart illustrating an operation of the aerosol suction device in Fig. 1 (part 2: cartridge identification process).
[Fig. 10] Fig. 10 is a flowchart illustrating an operation of the aerosol suction device in Fig. 1 (part 3: standby control).
[Fig. 11] Fig. 11 is a flowchart illustrating an operation of the aerosol suction device in Fig. 1 (part 4: discharge control and aerosol generation control).
[Fig. 12] Fig. 12 is a flowchart illustrating an operation of the aerosol suction device in Fig. 1 (part 5: residual amount updating process and power-off control).
[Fig. 13] Fig. 13 is an explanatory view illustrating a specific control example according to a menthol mode (part 1: when both an aerosol source and a flavor source contain menthol).
[Fig. 14] Fig. 14 is an explanatory view illustrating a specific control example according to the menthol mode (part 2: when only the aerosol source contains menthol).
[Fig. 15] Fig. 15 is an enlarged view of a main part of a periphery of a cartridge reading device in an aerosol suction device according to a second embodiment of the present invention.
[Fig. 16] Fig. 16 is a flowchart illustrating an operation in a cartridge identification process in the aerosol suction device according to the second embodiment of the present invention.
[Fig. 17] Fig. 17 is an enlarged view of a main part of a periphery of a cartridge reading device in an aerosol suction device according to a third embodiment of the present invention.
[Fig. 18] Fig. 18 is a flowchart illustrating an operation in a cartridge identification process in the aerosol suction device according to the third embodiment of the present invention.

DESCRIPTION OF EMBODIMENTS

[0012] Hereinafter, embodiments of an aerosol generating device of the present invention will be described with

reference to the accompanying drawings. Note that the drawings are viewed in directions of reference numerals.

[First Embodiment]

[0013] First, an aerosol suction device 1 as the first embodiment of an aerosol generating device of the present invention will be described with reference to Figs. 1 to 14.

(Overall Outline of Aerosol Suction Device)

[0014] As illustrated in Figs. 1 to 3, the aerosol suction device 1 is an instrument for generating an aerosol without combustion, adding a flavor component to the generated aerosol, and enabling a user to suction the aerosol containing the flavor component. As an example, the aerosol suction device 1 has a rod shape.

[0015] The aerosol suction device 1 includes a power supply unit 10, a cartridge cover 20 in which a cartridge 40 storing an aerosol source 71 is accommodated, and a capsule holder 30 in which a capsule 50 having an accommodation chamber 53 in which a flavor source 52 is accommodated is accommodated. The power supply unit 10, the cartridge cover 20, and the capsule holder 30 are provided in this order from one end side to the other end side in a longitudinal direction of the aerosol suction device 1. The power supply unit 10 has a substantially cylindrical shape centered on a center line L extending in the longitudinal direction of the aerosol suction device 1. The cartridge cover 20 and the capsule holder 30 have a substantially annular shape centered on the center line L extending in the longitudinal direction of the aerosol suction device 1. An outer peripheral surface of the power supply unit 10 and an outer peripheral surface of the cartridge cover 20 have a substantially annular shape having substantially the same diameter, and the capsule holder 30 has a substantially annular shape slightly smaller in diameter than the power supply unit 10 and the cartridge cover 20.

[0016] Hereinafter, in order to simplify and clarify the description, the longitudinal direction of the aerosol suction device 1 having a rod shape is defined as a first direction X. In the first direction X, for convenience, a side of the aerosol suction device 1 on which the power supply unit 10 is disposed is defined as a bottom side, and a side of the aerosol suction device 1 on which the capsule holder 30 is disposed is defined as a top side. In the drawings, the bottom side in the first direction X of the aerosol suction device 1 is denoted by D, and the top side in the first direction of the aerosol suction device 1 is denoted by U.

[0017] The cartridge cover 20 has a hollow and substantially annular shape in which both end surfaces on the bottom side and the top side are opened. The cartridge cover 20 is connected to an end portion of the top side of the power supply unit 10 on an end portion of the bottom side. The cartridge cover 20 is attachable to and detachable from the power supply unit 10.

[0018] The capsule holder 30 has a hollow and substantially annular shape in which both end surfaces on the bottom side and the top side are opened. An end portion of the capsule holder 30 on the bottom side is connected to an end portion of the cartridge cover 20 on the top side. The capsule holder 30 is formed of, for example, a metal such as aluminum. The capsule holder 30 is attachable to and detachable from the cartridge cover 20.

[0019] The cartridge 40 has a substantially cylindrical shape and is accommodated inside the cartridge cover 20. The cartridge 40 can be accommodated in the cartridge cover 20 in a state where the capsule holder 30 is removed from the cartridge cover 20, and can be removed from inside the cartridge cover 20. Therefore, the aerosol suction device 1 can be used by replacing the cartridge 40.

[0020] The capsule 50 has a substantially cylindrical shape, and is accommodated in a hollow portion of the capsule holder 30 having a hollow and substantially annular shape such that an end portion on the top side in the first direction X is exposed in the first direction X from an end portion of the capsule holder 30 on the top side. The capsule 50 is attachable to and detachable from the capsule holder 30. Therefore, the aerosol suction device 1 can be used by replacing the capsule 50.

(Power Supply Unit)

[0021] As illustrated in Figs. 3 and 4, the power supply unit 10 includes a power supply unit case 11 having a hollow and substantially annular shape centered on the center line L extending in the first direction X. The power supply unit case 11 is formed of, for example, a metal such as stainless steel. The power supply unit case 11 has a top surface 11a which is an end surface on the top side in the first direction X of the power supply unit case 11, a bottom surface 11b which is an end surface on the bottom side in the first direction X of the power supply unit case 11, and a side surface 11c extending in the first direction X from the top surface 11a to the bottom surface 11b in a substantially annular shape centered on the center line L.

[0022] A discharge terminal 12 is provided on the top surface 11a of the power supply unit case 11. The discharge terminal 12 is provided so as to protrude from the top surface 11a of the power supply unit case 11 toward the top side in the first direction X.

[0023] In addition, on the top surface 11a, an air supply unit 13 for supplying air to a later-described heating chamber 43 of the cartridge 40 is provided in the vicinity of the discharge terminal 12. The air supply unit 13 is provided so as to protrude from the top surface 11a of the power supply unit case 11 toward the top side in the first direction X.

[0024] A charge terminal 14 electrically connectable to an external power supply (not illustrated) is provided on the side surface 11c of the power supply unit case 11. In the present embodiment, the charge terminal 14 is provided on the side surface 11c in the vicinity of the bottom surface 11b, and is, for example, a receptacle to which a universal serial bus (USB) terminal, a micro USB terminal, or the like can be connected.

[0025] The charge terminal 14 may be a power receiving unit capable of wirelessly receiving electric power transmitted from the external power supply. In such a case, the charge terminal 14 (power receiving unit) may be implemented by a power receiving coil. A method for wireless power transfer (WPT) may be of an electromagnetic induction type, a magnetic resonance type, or a combination of the electromagnetic induction type and the magnetic resonance type. In addition, the charge terminal 14 may be a power receiving unit capable of receiving electric power transmitted from the external power supply in a contactless manner. As another example, the charge terminal 14 may include both the above-mentioned power receiving unit and the receptacle to which a USB terminal, a micro USB terminal, or the like can be connected.

[0026] An operation unit 15 operable by the user is provided on the side surface 11c of the power supply unit case 11. The operation unit 15 is provided on the side surface 11c in the vicinity of the top surface 11a. In the present embodiment, the operation unit 15 is provided at a position about 180 degrees away from the charge terminal 14 centered on the center line L when viewed from the first direction X. In the present embodiment, the operation unit 15 is a push button type switch having a circular shape when the side surface 11c of the power supply unit case 11 is viewed from an outer side. The operation unit 15 may have a shape other than the circular shape, and may be implemented by a touch panel, a switch other than the push button type switch, or the like.

[0027] The power supply unit case 11 is provided with a notification unit 16 which notifies various kinds of information. The notification unit 16 is implemented by a light-emitting element 161 and a vibration element 162 (see Fig. 6). In the present embodiment, the light-emitting element 161 is provided on an inner side of the power supply unit case 11 of the operation unit 15. A periphery of the circular operation unit 15 has transparency when the side surface 11c of the power supply unit case 11 is viewed from the outer side, and is implemented to be lit by the light-emitting element 161. In the present embodiment, the light-emitting element 161 can emit red light, green light, blue light, white light, and purple light.

[0028] The power supply unit case 11 is provided with an air intake port (not illustrated) for taking in outside air. The air intake port may be provided in a periphery of the charge terminal 14, in the periphery of the operation unit 15, or in the power supply unit case 11 at a position away from the charge terminal 14 and the operation unit 15. The air intake port may be provided in the cartridge cover 20. The air intake port may be provided at two or more of the above-mentioned portions.

[0029] In the hollow portion of the power supply unit case 11 having a hollow and substantially annular shape, a power supply 61, an intake sensor 62, a micro controller unit (MCU) 63, and a charging integrated circuit (IC) 64 are accommodated. Inside the power supply unit case 11, a low drop out (LDO) regulator 65, a DC/DC converter 66, a first temperature detection element 67 including a voltage sensor 671 and a current sensor 672, and a second temperature detection element 68 including a voltage sensor 681 and a current sensor 682 are further accommodated (see Figs. 6 and 7).

[0030] The power supply 61 is a chargeable/dischargeable power storage device such as a secondary battery or an electric double layer capacitor, and is preferably a lithium ion secondary battery. An electrolyte of the power supply 61 may be implemented by one or a combination of a gel electrolyte, an electrolyte solution, a solid electrolyte, and an ionic liquid.

[0031] The intake sensor 62 is provided in the vicinity of the operation unit 15. The intake sensor 62 is a pressure sensor which detects a puff (suction) operation. The intake sensor 62 is implemented so as to output a value of a change in pressure (internal pressure) inside the power supply unit 10 generated by suction of the user through a later-described suction port 58 of the capsule 50. The intake sensor 62 outputs, for example, an output value (for example, a voltage value or a current value) corresponding to an internal pressure which changes according to a flow rate of air sucked from the air intake port toward the suction port 58 of the capsule 50 (that is, the puff operation of the user). The intake sensor 62 may output an analog value or may output a digital value converted from the analog value.

[0032] In order to compensate for a detected pressure, the intake sensor 62 may include a built-in temperature sensor which detects a temperature (outside air temperature) of an environment where the power supply unit 10 is placed. The intake sensor 62 may be implemented by a condenser microphone, a flow rate sensor, or the like, instead of the pressure sensor.

[0033] The MCU 63 is an electronic component which executes various types of control of the aerosol suction device 1. The MCU 63 is specifically implemented by a processor as a main component, and further includes a memory 63a implemented by a storage medium such as a random access memory (RAM) necessary for an operation of the processor and a read only memory (ROM) which stores various kinds of information (see Fig. 6). Specifically, the processor in the

present description is an electrical circuit in which circuit elements such as semiconductor devices are combined.

[0034] When the puff operation is performed and the output value of the intake sensor 62 exceeds a threshold value, the MCU 63 determines that an aerosol generation request is made, and thereafter, when the output value of the intake sensor 62 falls below this threshold value, the MCU 63 determines that the aerosol generation request is ended. In this way, the output value of the intake sensor 62 is used as a signal indicating the aerosol generation request. Therefore, the intake sensor 62 constitutes a sensor which outputs the aerosol generation request. Instead of the MCU 63, the intake sensor 62 may execute the above-mentioned determination, and the MCU 63 may receive a digital value corresponding to a determination result from the intake sensor 62. As a specific example, the intake sensor 62 may output a high-level signal in response to determining that the aerosol generation request is made, and the intake sensor 62 may output a low-level signal in response to determining that the aerosol generation request is ended. In addition, the threshold value with which the MCU 63 or the intake sensor 62 determines that the aerosol generation request is made may be different from the threshold value with which the MCU 63 or the intake sensor 62 determines that the aerosol generation request is ended.

[0035] The MCU 63 may detect the aerosol generation request based on the operation of the operation unit 15 instead of the intake sensor 62. For example, when the user performs a predetermined operation on the operation unit 15 to start the suction of aerosol, the operation unit 15 may output a signal indicating the aerosol generation request to the MCU 63. In this case, the operation unit 15 constitutes a sensor which outputs the aerosol generation request.

[0036] The charging IC 64 is provided in the vicinity of the charge terminal 14. The charging IC 64 controls electric power which is input from the charge terminal 14 and charged to the power supply 61 to execute charge control of the power supply 61. The charging IC 64 may be disposed in the vicinity of the MCU 63.

(Cartridge)

[0037] As illustrated in Fig. 3, the cartridge 40 includes a cartridge case 41 having a substantially columnar shape with an axial direction as the longitudinal direction. The cartridge case 41 is formed of a colorless transparent resin such as polycarbonate. A storage chamber 42 which stores the aerosol source 71 and a heating chamber 43 which heats the aerosol source 71 are formed inside the cartridge case 41. In the heating chamber 43, a wick 44 which transports the aerosol source 71 stored in the storage chamber 42 to the heating chamber 43 and holds the aerosol source 71 in the heating chamber 43, and a first heater 45 which heats the aerosol source 71 held by the wick 44 to vaporize and/or atomize the aerosol source 71 are accommodated. The cartridge 40 further includes a first aerosol flow path 46 which aerosolizes the aerosol source 71, which is heated by the first heater 45 and vaporized and/or atomized, and transports the aerosol source 71 from the heating chamber 43 toward the capsule 50.

[0038] The storage chamber 42 and the heating chamber 43 are formed adjacent to each other in the longitudinal direction of the cartridge 40. The heating chamber 43 is formed on one end side in the longitudinal direction of the cartridge 40, and the storage chamber 42 is formed so as to be adjacent to the heating chamber 43 in the longitudinal direction of the cartridge 40 and extend to an end portion of the other end side in the longitudinal direction of the cartridge 40.

[0039] The storage chamber 42 has a hollow and substantially annular shape with the longitudinal direction of the cartridge 40 as an axial direction, and stores the aerosol source 71 in an annular portion. In the storage chamber 42, a porous body such as a resin web or cotton may be accommodated, and the aerosol source 71 may be impregnated in the porous body. The storage chamber 42 may store only the aerosol source 71 without accommodating the porous body on the resin web or cotton. The aerosol source 71 contains a liquid such as glycerin and/or propylene glycol.

[0040] The aerosol source 71 may contain menthol 80. In the present embodiment, a regular type cartridge 40 in which the aerosol source 71 not containing the menthol 80 is stored in the storage chamber 42 and a menthol type cartridge 40 in which the aerosol source 71 containing the menthol 80 is stored in the storage chamber 42 are provided for the user by a manufacturer or the like of the aerosol suction device 1. Fig. 3 illustrates an example in which the menthol type cartridge 40 in which the aerosol source 71 containing the menthol 80 is stored in the storage chamber 42 is mounted. In addition, in Fig. 3, the menthol 80 is illustrated in a form of particles for easy understanding, but in the present embodiment, the menthol 80 is dissolved in a liquid such as glycerin and/or propylene glycol. Further, it should be noted that the menthol 80 illustrated in Fig. 3 and the like is merely simulated, and a position and an amount of the menthol 80 in the storage chamber 42, a position and an amount of the menthol 80 in the capsule 50, and a positional relation between the menthol 80 and the flavor source 52 do not always coincide with those of real objects.

[0041] The wick 44 is a liquid holding member which draws the aerosol source 71 stored in the storage chamber 42 from the storage chamber 42 into the heating chamber 43 using capillary action and holds the aerosol source 71 in the heating chamber 43. The wick 44 is implemented by, for example, glass fiber or porous ceramic. The wick 44 may extend into the storage chamber 42.

[0042] The first heater 45 is electrically connected to the connection terminal 47. In the present embodiment, the first heater 45 is implemented by a heating wire (coil) wound around the wick 44 at a predetermined pitch. The first heater

45 may be any element which can heat the aerosol source 71 held by the wick 44 and vaporize and/or atomize the aerosol source 71. The first heater 45 may be a heating element such as a heating resistor, a ceramic heater, or an induction heating heater. As the first heater 45, a heater having a correlation between a temperature and an electrical resistance value is used. As the first heater 45, for example, a heater having a positive temperature coefficient (PTC) characteristic in which the electrical resistance value increases as the temperature increases is used. Alternatively, as the first heater 45, for example, a heater having a negative temperature coefficient (NTC) characteristic in which the electrical resistance value decreases as the temperature increases may be used. In addition, a part of the first heater 45 may be provided outside the heating chamber 43.

[0043] The first aerosol flow path 46 is formed in a hollow portion of the storage chamber 42 having a hollow and substantially annular shape, and extends in the longitudinal direction of the cartridge 40. The first aerosol flow path 46 is formed by a wall portion 46a extending in a substantially annular shape in the longitudinal direction of the cartridge 40. The wall portion 46a of the first aerosol flow path 46 is also an inner peripheral side wall portion of the storage chamber 42 having a substantially annular shape. In the first aerosol flow path 46, a first end portion 461 in the longitudinal direction of the cartridge 40 is connected to the heating chamber 43, and a second end portion 462 in the longitudinal direction of the cartridge 40 is open to an end surface on the other end side of the cartridge case 41.

[0044] An electrode portion 48 provided with the connection terminal 47 is fitted to an end portion on one end side in the longitudinal direction of the cartridge case 41, that is, an end portion of the cartridge case 41 on a side where the heating chamber 43 is disposed in the longitudinal direction of the cartridge 40. The electrode portion 48 has a bottomed cylindrical shape having substantially the same center and substantially the same diameter as the cartridge case 41, and a bottom surface 48a of the electrode portion 48 constitutes, in the longitudinal direction of the cartridge 40, an end surface of the cartridge 40 on the side where the heating chamber 43 is disposed. The connection terminal 47 is provided on a surface of the bottom surface 48a of the electrode portion 48 facing an outer side of the cartridge 40, and is exposed on an outer surface of the cartridge 40.

[0045] The cartridge 40 is accommodated in a hollow portion of the cartridge cover 20 having a hollow and substantially annular shape such that the longitudinal direction of the cartridge 40 is the first direction X which is the longitudinal direction of the aerosol suction device 1. Further, the cartridge 40 is accommodated in the hollow portion of the cartridge cover 20 such that the heating chamber 43 is on the bottom side of the aerosol suction device 1 (that is, power supply unit 10 side) and the storage chamber 42 is on the top side of the aerosol suction device 1 (that is, capsule 50 side) in the first direction X.

[0046] The first aerosol flow path 46 of the cartridge 40 is formed to extend in the first direction X on the center line L of the aerosol suction device 1 in a state where the cartridge 40 is accommodated inside the cartridge cover 20.

[0047] During use of the aerosol suction device 1, the cartridge 40 is accommodated in the hollow portion of the cartridge cover 20 such that the connection terminal 47 is kept in contact with the discharge terminal 12 provided on the top surface 11a of the power supply unit case 11. The discharge terminal 12 of the power supply unit 10 comes into contact with the connection terminal 47 of the cartridge 40, whereby the power supply 61 of the power supply unit 10 is electrically connected to the first heater 45 of the cartridge 40 via the discharge terminal 12 and the connection terminal 47.

[0048] Further, during use of the aerosol suction device 1, the cartridge 40 is accommodated in the hollow portion of the cartridge cover 20 such that air flowing in from the air intake port (not illustrated) provided in the power supply unit case 11 is taken into the heating chamber 43 from the air supply unit 13 provided on the top surface 11a of the power supply unit case 11 as indicated by an arrow B in Fig. 3. The arrow B is inclined with respect to the center line L in Fig. 3, but may be in the same direction as the center line L. In other words, the arrow B may be parallel to the center line L.

[0049] During use of the aerosol suction device 1, the first heater 45 heats the aerosol source 71 held by the wick 44 without combustion by electric power supplied from the power supply 61 via the discharge terminal 12 provided in the power supply unit case 11 and the connection terminal 47 provided in the cartridge 40. In the heating chamber 43, the aerosol source 71 heated by the first heater 45 is vaporized and/or atomized. In this case, when the cartridge 40 is a menthol type cartridge in which the aerosol source 71 containing the menthol 80 is stored in the storage chamber 42, the vaporized and/or atomized aerosol source 71 also contains vaporized and/or atomized menthol 80 together with vaporized and/or atomized glycerin and/or propylene glycol.

[0050] The aerosol source 71 vaporized and/or atomized in the heating chamber 43 is aerosolized by using the air taken into the heating chamber 43 from the air supply unit 13 of the power supply unit case 11 as a dispersion medium. Further, the aerosol source 71 vaporized and/or atomized in the heating chamber 43 and the air taken into the heating chamber 43 from the air supply unit 13 of the power supply unit case 11 flow through the first aerosol flow path 46 from the first end portion 461 of the first aerosol flow path 46 communicating with the heating chamber 43 to the second end portion 462 of the first aerosol flow path 46 while further being aerosolized. The temperature of the aerosol source 71 vaporized and/or atomized in the heating chamber 43 decreases in the process of flowing through the first aerosol flow path 46, and the aerosolization thereof is promoted. In this way, an aerosol 72 is generated in the heating chamber 43 and the first aerosol flow path 46 by the aerosol source 71 vaporized and/or atomized in the heating chamber 43 and the air taken into the heating chamber 43 from the air supply unit 13 of the power supply unit case 11. When the cartridge

40 is a menthol type cartridge in which the aerosol source 71 containing the menthol 80 is stored in the storage chamber 42, the aerosol 72 in the heating chamber 43 and the first aerosol flow path 46 also contains the menthol 80 derived from the aerosol source 71.

(Capsule)

[0051] The capsule 50 has a substantially cylindrical shape and includes a side wall 51 which is open at both end surfaces and extends in a substantially annular shape. The side wall 51 is formed of, for example, a resin such as plastic. The capsule 50 includes the accommodation chamber 53 in which the flavor source 52 is accommodated.

[0052] The flavor source 52 includes tobacco granules 521 obtained by molding a tobacco raw material into granules. The flavor source 52 may contain the menthol 80 in addition to the tobacco granules 521. In the present embodiment, a regular type capsule 50 which accommodates the flavor source 52 not containing the menthol 80 and a menthol type capsule 50 which accommodates the flavor source 52 containing the menthol 80 are provided for the user by the manufacturer or the like of the aerosol suction device 1. Fig. 3 illustrates an example in which the menthol type capsule 50 which accommodates the flavor source 52 containing the menthol 80 is mounted. In the flavor source 52 of the menthol type capsule 50, the menthol 80 is adsorbed to the tobacco granules 521.

[0053] The flavor source 52 may contain cut tobacco instead of the tobacco granules 521. In addition, the flavor source 52 may contain plants other than tobacco (for example, mint, Chinese medicine, or herb) instead of the tobacco granules 521. Further, the flavor source 52 may have another fragrance added in addition to the menthol 80.

[0054] The accommodation chamber 53 is formed in an internal space of the capsule 50 surrounded by the side wall 51. The accommodation chamber 53 includes an inlet portion 54 provided on one end side in a cylindrical axis direction of the capsule 50 extending in a substantially cylindrical shape, and an outlet portion 55 provided on the other end side in the cylindrical axis direction of the capsule 50. The inlet portion 54 is formed at a bottom portion of the capsule 50 and constitutes the bottom surface of the capsule 50. The inlet portion 54 is a mesh-like partition wall through which the flavor source 52 cannot pass and the aerosol 72 can pass. The outlet portion 55 is a filter member filled in the internal space of the capsule 50 surrounded by the side wall 51 at the end portion of the side wall 51 on the top side in the cylindrical axis direction of the capsule 50. The outlet portion 55 is a filter member through which the flavor source 52 cannot pass and the aerosol 72 can pass. In the present embodiment, the outlet portion 55 is provided in the vicinity of a top portion of the capsule 50, but the outlet portion 55 may be provided at a position separated from the top portion of the capsule 50. The accommodation chamber 53 is surrounded by the side wall 51, the inlet portion 54, and the outlet portion 55.

(Capsule Holder)

[0055] The capsule holder 30 includes a side wall 31 extending in the first direction X in a substantially annular shape, and has a hollow and substantially annular shape in which both end surfaces on the bottom side and the top side are opened. The side wall 31 has a substantially annular shape slightly larger in diameter than the side wall 51 of the capsule 50. The side wall 31 is formed of, for example, a metal such as aluminum. The capsule holder 30 is connected to the end portion on the top side of the cartridge cover 20 at the end portion on the bottom side by screwing, locking, or the like, and is attachable to and detachable from the cartridge cover 20. An inner peripheral surface 31a of the side wall 31 having a substantially annular shape has an annular shape centered on the center line L of the aerosol suction device 1, and has a diameter larger than that of the first aerosol flow path 46 of the cartridge 40 and smaller than that of the cartridge cover 20.

[0056] The capsule holder 30 is provided with a bottom wall 32 provided on an end portion of the side wall 31 on the bottom side. The bottom wall 32 is formed of, for example, a resin. The bottom wall 32 is fixed to the end portion of the side wall 31 on the bottom side, and closes a hollow portion surrounded by the inner peripheral surface of the side wall 31 by the end portion of the side wall 31 on the bottom side except for a communication hole 33 to be described later.

[0057] The bottom wall 32 is provided with the communication hole 33 penetrating in the first direction X. The communication hole 33 is formed at a position overlapping the center line L when viewed from the first direction. In a state where the cartridge 40 is accommodated inside the cartridge cover 20 and the capsule holder 30 is mounted on the cartridge cover 20, the communication hole 33 is formed such that the first aerosol flow path 46 of the cartridge 40 is positioned inside the communication hole 33 when viewed from the top side in the first direction X.

[0058] A second heater 34 is provided on the side wall 31 of the capsule holder 30. The second heater 34 has an annular shape along the side wall 31 having a substantially annular shape, and extends in the first direction X. The second heater 34 heats the accommodation chamber 53 of the capsule 50 to heat the flavor source 52 accommodated in the accommodation chamber 53. The second heater 34 may be any element which can heat the flavor source 52 by heating the accommodation chamber 53 of the capsule 50. The second heater 34 may be a heating element such as a heating resistor, a ceramic heater, or an induction heating heater. As the second heater 34, a heater having a correlation

between a temperature and an electrical resistance value is used. As the second heater 34, for example, a heater having a positive temperature coefficient (PTC) characteristic in which the electrical resistance value increases as the temperature increases is used. Alternatively, as the second heater 34, for example, a heater having a negative temperature coefficient (NTC) characteristic in which the electrical resistance value decreases as the temperature increases may be used.

[0059] In a state where the cartridge cover 20 is mounted on the power supply unit 10 and the capsule holder 30 is mounted on the cartridge cover 20, the second heater 34 is electrically connected to the power supply 61 of the power supply unit 10 (see Figs. 6 and 7). Specifically, in the state where the cartridge cover 20 is mounted on the power supply unit 10 and the capsule holder 30 is mounted on the cartridge cover 20, a discharge terminal 17 (see Fig. 6) of the power supply unit 10 and a connection terminal (not illustrated) of the capsule holder 30 come into contact with each other, whereby the second heater 34 of the capsule holder 30 is electrically connected to the power supply 61 of the power supply unit 10 via the discharge terminal 17 and the connection terminal of the capsule holder 30.

(Configuration During Use of Aerosol Suction Device)

[0060] The aerosol suction device 1 implemented in this manner is used in a state where the cartridge cover 20, the capsule holder 30, the cartridge 40, and the capsule 50 are mounted on the power supply unit 10. In this state, in the aerosol suction device 1, an aerosol flow path 90 is formed by at least the first aerosol flow path 46 provided in the cartridge 40 and the communication hole 33 provided in the bottom wall 32 of the capsule holder 30. The aerosol flow path 90 connects the heating chamber 43 of the cartridge 40 and the accommodation chamber 53 of the capsule 50, and transports the aerosol 72 generated in the heating chamber 43 from the heating chamber 43 to the accommodation chamber 53.

[0061] In the aerosol suction device 1, when the user performs a suction operation from the suction port 58 during use, the air flowing in from the air intake port (not illustrated) provided in the power supply unit case 11 is taken into the heating chamber 43 of the cartridge 40 from the air supply unit 13 provided on the top surface 11a of the power supply unit case 11 as indicated by the arrow B in Fig. 3. Further, the first heater 45 generates heat, the aerosol source 71 held by the wick 44 is heated, and the aerosol source 71 heated by the first heater 45 is vaporized and/or atomized in the heating chamber 43. The aerosol source 71 vaporized and/or atomized by the first heater 45 is aerosolized by using the air taken into the heating chamber 43 from the air supply unit 13 of the power supply unit case 11 as a dispersion medium. The aerosol source 71 vaporized and/or atomized in the heating chamber 43 and the air taken into the heating chamber 43 from the air supply unit 13 of the power supply unit case 11 flow through the first aerosol flow path 46 from the first end portion 461 of the first aerosol flow path 46 communicating with the heating chamber 43 to the second end portion 462 of the first aerosol flow path 46 while being aerosolized. The aerosol 72 generated in this manner is introduced from the second end portion 462 of the first aerosol flow path 46 through the communication hole 33 provided in the bottom wall 32 of the capsule holder 30 into the accommodation chamber 53 from the inlet portion 54 of the capsule 50.

[0062] The aerosol 72 introduced into the accommodation chamber 53 from the inlet portion 54 passes through the flavor source 52 accommodated in the accommodation chamber 53 when flowing through the accommodation chamber 53 from the inlet portion 54 to the outlet portion 55 in the first direction X of the aerosol suction device 1, whereby the flavor component is added from the flavor source 52.

[0063] In this way, the aerosol 72 flows through the accommodation chamber 53 from the inlet portion 54 to the outlet portion 55 in the first direction X of the aerosol suction device 1. Thus, in the present embodiment, in the accommodation chamber 53, a flow direction of the aerosol 72 in which the aerosol 72 flows from the inlet portion 54 to the outlet portion 55 is the cylindrical axis direction of the capsule 50 and is the first direction X of the aerosol suction device 1.

[0064] Further, during use of the aerosol suction device 1, the second heater 34 provided in the capsule holder 30 generates heat to heat the accommodation chamber 53. As a result, the flavor source 52 accommodated in the accommodation chamber 53 and the aerosol 72 flowing through the accommodation chamber 53 are heated.

(Information Display Unit)

[0065] As illustrated in Fig. 5, the cartridge 40 is formed with an information display unit 49. In the present embodiment, the information display unit 49 is formed on an outer side surface 411a of an outer peripheral wall 411 extending in a cylindrical shape in the longitudinal direction of the cartridge case 41.

[0066] The information display unit 49 is partitioned into a plurality of display areas. In the present embodiment, the information display unit 49 is partitioned into a first display area 491, a second display area 492, and a third display area 493. In the present embodiment, the first display area 491, the second display area 492, and the third display area 493 are formed adjacent to each other in the order of the first display area 491, the second display area 492, and the third display area 493 from a side close to the electrode portion 48 on the outer side surface 411a of the outer peripheral wall 411 of the cartridge case 41 in the longitudinal direction of the cartridge case 41. In addition, in the present embodiment,

any of the first display area 491, the second display area 492, and the third display area 493 is formed to extend over an entire region in a circumferential direction of the outer side surface 411a of the outer peripheral wall 411 of the cartridge case 41.

[0067] Each of the first display area 491, the second display area 492, and the third display area 493 is colored in black or white. Each of the first display area 491, the second display area 492, and the third display area 493 may be colored in black, or may be colorless and transparent without being colored, and an inside of an area where the information display unit 49 of the cartridge case 41 is formed may be colored in white.

[0068] In the present embodiment, regarding colored patterns of the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 of the regular type cartridge 40 in which the aerosol source 71 not containing the menthol 80 is stored in the storage chamber 42, the first display area 491 is white or colorless and transparent, the second display area 492 is black, and the third display area 493 is white or colorless and transparent. Regarding colored patterns of the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 of the menthol type cartridge 40 in which the aerosol source 71 containing the menthol 80 is stored in the storage chamber 42, the first display area 491 is black, the second display area 492 is white or colorless and transparent, and the third display area 493 is black. Fig. 5 illustrates an example in which the menthol type cartridge 40 in which the aerosol source 71 containing the menthol 80 is stored in the storage chamber 42 is mounted.

[0069] As the colored patterns of the first display area 491, the second display area 492, and the third display area 493, any different colored pattern can be adopted in accordance with a flavor type of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40.

(Cartridge Cover and Cartridge Information Reading Device)

[0070] The cartridge cover 20 includes a substantially-annular-shaped outer peripheral wall 21 extending in the first direction X, and a substantially-annular-shaped inner peripheral wall 22 which is at substantially the same center as the outer peripheral wall 21 inside a circular ring of the outer peripheral wall 21 and extends in the first direction X and faces the outer peripheral wall 21. The outer peripheral wall 21 is formed of, for example, a metal such as stainless steel, and does not allow light to be transmitted. The inner peripheral wall 22 is formed of, for example, a resin such as polycarbonate, is colorless and transparent, and allows light to be transmitted.

[0071] A space portion 23 is formed between the outer peripheral wall 21 and the inner peripheral wall 22. The space portion 23 is provided with a cartridge information reading device 24 capable of reading a display of the information display unit 49 of the cartridge 40. Therefore, the cartridge 40 is accommodated in a space on an inner side of the inner peripheral wall 22 which is surrounded by the inner peripheral wall 22 of the cartridge cover 20, and the cartridge information reading device 24 is separated from the space in which the cartridge 40 is accommodated by the inner peripheral wall 22, and is provided in the space portion 23 formed on an outer side of the inner peripheral wall 22. As a result, when the user performs a suction operation during use of the aerosol suction device 1, the cartridge information reading device 24 can be attached to the aerosol suction device 1 such that the user does not suck a component such as solder, an adhesive, or the like used for fixing the cartridge information reading device 24.

[0072] In the space portion 23, a light shielding member 25 which does not allow light to be transmitted is provided between the cartridge information reading device 24 and the inner peripheral wall 22 of the cartridge cover 20. The light shielding member 25 may be, for example, a light shielding film which does not allow light to be transmitted, which is adhered to a surface of the inner peripheral wall 22 on a side facing the outer peripheral wall 21, or may be a light shielding membrane made of a material which does not allow light to be transmitted, which is formed on the surface of the inner peripheral wall 22 on the side facing the outer peripheral wall 21.

[0073] The cartridge information reading device 24 includes a light projecting unit 241 capable of projecting light to the inside of the cartridge cover 20 toward the information display unit 49 of the cartridge 40, and a light receiving unit 242 capable of receiving light reflected from the information display unit 49 of the cartridge 40.

[0074] In the present embodiment, the cartridge information reading device 24 includes: the same number of light projecting units 241 as the display areas of the information display unit 49 so as to be paired with each of the first display area 491, the second display area 492, and the third display area 493 of the information display unit 49 of the cartridge 40; and the same number of light receiving units 242 as the display areas of the information display unit 49 so as to be paired with each of the first display area 491, the second display area 492, and the third display area 493 of the information display unit 49 of the cartridge 40. Specifically, the light projecting units 241 of the cartridge information reading device 24 include a first light projecting unit 241a provided to be paired with the first display area 491 of the information display unit 49 of the cartridge 40, a second light projecting unit 241b provided to be paired with the second display area 492 of the information display unit 49 of the cartridge 40, and a third light projecting unit 241c provided to be paired with the third display area 493 of the information display unit 49 of the cartridge 40. The light receiving units 242 of the cartridge information reading device 24 include a first light receiving unit 242a provided to be paired with the first display area 491

of the information display unit 49 of the cartridge 40, a second light receiving unit 242b provided to be paired with the second display area 492 of the information display unit 49 of the cartridge 40, and a third light receiving unit 242c provided to be paired with the third display area 493 of the information display unit 49 of the cartridge 40.

[0075] The light projecting units 241 of the cartridge information reading device 24, that is, the first light projecting unit 241a, the second light projecting unit 241b, and the third light projecting unit 241c are, for example, light-emitting elements capable of projecting infrared light. The light projecting units 241 of the cartridge information reading device 24, that is, the first light projecting unit 241a, the second light projecting unit 241b, and the third light projecting unit 241c may be, for example, light-emitting elements capable of projecting white light.

[0076] The light receiving units 242 of the cartridge information reading device 24, that is, the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c are, for example, light-receiving elements which include a photodiode, a phototransistor, and the like and is capable of detecting an illuminance of received light.

[0077] The first light projecting unit 241a can project light so as to irradiate the first display area 491 paired therewith, and the first light receiving unit 242a can receive light reflected by the first display area 491 paired therewith. The second light projecting unit 241b can project light so as to irradiate the second display area 492 paired therewith, and the second light receiving unit 242b can receive light reflected by the second display area 492 paired therewith. The third light projecting unit 241c can project light so as to irradiate the third display area 493 paired therewith, and the third light receiving unit 242c can receive light reflected by the third display area 493 paired therewith.

[0078] Further, the first light projecting unit 241a and the first light receiving unit 242a are provided at positions facing the first display area 491 paired therewith. The second light projecting unit 241b and the second light receiving unit 242b are provided at positions facing the second display area 492 paired therewith. The third light projecting unit 241c and the third light receiving unit 242c are provided at positions facing the third display area 493 paired therewith.

[0079] The first light projecting unit 241a and the first light receiving unit 242a, the second light projecting unit 241b and the second light receiving unit 242b, and the third light projecting unit 241c and the third light receiving unit 242c are all provided between the outer peripheral wall 21 and the inner peripheral wall 22, that is, in the space portion 23 formed on the outer side of the inner peripheral wall 22. Therefore, the inner peripheral wall 22 of the cartridge cover 20 is provided between the cartridge 40 and each of the first light projecting unit 241a and the first light receiving unit 242a, each of the second light projecting unit 241b and the second light receiving unit 242b, and each of the third light projecting unit 241c and the third light receiving unit 242c. The light shielding member 25 is provided between the inner peripheral wall 22 of the cartridge cover 20 and each of the first light projecting unit 241a and the first light receiving unit 242a, each of the second light projecting unit 241b and the second light receiving unit 242b, and each of the third light projecting unit 241c and the third light receiving unit 242c. In this way, the first light projecting unit 241a and the first light receiving unit 242a, the second light projecting unit 241b and the second light receiving unit 242b, and the third light projecting unit 241c and the third light receiving unit 242c are disposed to face the cartridge 40 with the inner peripheral wall 22 of the cartridge cover 20 and the light shielding member 25 interposed therebetween.

[0080] The light shielding member 25 is formed with light transmitting portions 26 which allow light to be transmitted. The light transmitting portions 26 are, for example, through holes formed in the light shielding member 25. The light transmitting portions 26 are formed between the cartridge information reading device 24 and the information display unit 49 of the cartridge 40 in a state where the cartridge cover 20 is mounted on the power supply unit 10 and the cartridge 40 is mounted inside the cartridge cover 20. In the present embodiment, the light transmitting portions 26 include: a first light transmitting portion 261a formed between the first display area 491 of the information display unit 49 and each of the first light projecting unit 241a and the first light receiving unit 242a paired with the first display area 491; a second light transmitting portion 261b formed between the second display area 492 of the information display unit 49 and each of the second light projecting unit 241b and the second light receiving unit 242b paired with the second display area 492; and a third light transmitting portion 261c formed between the third display area 493 of the information display unit 49 and each of the third light projecting unit 241c and the third light receiving unit 242c paired with the third display area 493.

[0081] The first light projecting unit 241a can project light such that the light passes through the first light transmitting portion 261a of the light shielding member 25 and the inner peripheral wall 22 of the cartridge cover 20, which are formed between the first light projecting unit 241a and the first display area 491 paired therewith, to irradiate the first display area 491 of the information display unit 49. The first light receiving unit 242a can receive light reflected by the first display area 491 of the information display unit 49 and passing through the inner peripheral wall 22 of the cartridge cover 20 and the first light transmitting portion 261a of the light shielding member 25. The second light projecting unit 241b can project light such that the light passes through the second light transmitting portion 261b of the light shielding member 25 and the inner peripheral wall 22 of the cartridge cover 20, which are formed between the second projecting unit 241b and the second display area 492 paired therewith, to irradiate the second display area 492 of the information display unit 49. The second light receiving unit 242b can receive light reflected by the second display area 492 of the information display unit 49 and passing through the inner peripheral wall 22 of the cartridge cover 20 and the second light transmitting portion 261b of the light shielding member 25. The third light projecting unit 241c can project light such that the light passes through the third light transmitting portion 261c of the light shielding member 25 and the inner peripheral wall

22 of the cartridge cover 20, which are formed between the third light projecting unit 241c and the third display area 493 paired therewith, to irradiate the third display area 493 of the information display unit 49. The third light receiving unit 242c can receive light reflected by the third display area 493 of the information display unit 49 and passing through the inner peripheral wall 22 of the cartridge cover 20 and the third light transmitting portion 261c of the light shielding member 25.

[0082] In the light receiving units 242 of the cartridge information reading device 24, that is, the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c, an electromotive force corresponding to the illuminance of the received light is generated by a photovoltaic effect. The light receiving units 242 of the cartridge information reading device 24, that is, the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c output an output signal of a voltage corresponding to the illuminance of the received light to the MCU 63 by the electromotive force generated by the photovoltaic effect.

[0083] In this case, when coloring of the first display area 491, the second display area 492, and the third display area 493 is white or colorless and transparent, an illuminance of the light reflected by the first display area 491, the second display area 492, and the third display area 493 increases, so that the illuminance of the light received by the light receiving units 242, that is, the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c of the cartridge information reading device 24 also increases, and the voltage of the output signal output from the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c becomes equal to or higher than a predetermined voltage. On the other hand, when the coloring of the first display area 491, the second display area 492, and the third display area 493 is black, the illuminance of the light reflected by the first display area 491, the second display area 492, and the third display area 493 decreases, so that the illuminance of the light received by the light receiving units 242, that is, the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c of the cartridge information reading device 24 also decreases, and the voltage of the output signal output from the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c becomes lower than the predetermined voltage.

[0084] Therefore, the coloring of the first display area 491, the second display area 492, and the third display area 493 of the information display unit 49 can be detected according to whether the voltage of the output signal output from the light receiving units 242 of the cartridge information reading device 24, that is, the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c is equal to or higher than the predetermined voltage or lower than the predetermined voltage.

[0085] Therefore, the cartridge information reading device 24 can detect the coloring of the first display area 491 of the information display unit 49 by the first light projecting unit 241a and the first light receiving unit 242a, can detect the coloring of the second display area 492 by the second light projecting unit 241b and the second light receiving unit 242b, and can detect the coloring of the third display area 493 by the third light projecting unit 241c and the third light receiving unit 242c. Accordingly, since the cartridge information reading device 24 can detect the coloring of each of the display areas including the first display area 491, the second display area 492, and the third display area 493 of the information display unit 49 by the separate light projecting unit and light receiving unit, the cartridge information reading device 24 can more accurately detect the coloring of each of the display areas including the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 of the cartridge 40.

[0086] Further, in the present embodiment, the first light projecting unit 241a and the first light receiving unit 242a are provided at positions facing the first display area 491 paired therewith. The second light projecting unit 241b and the second light receiving unit 242b are provided at positions facing the second display area 492 paired therewith. The third light projecting unit 241c and the third light receiving unit 242c are provided at positions facing the third display area 493 paired therewith.

[0087] Therefore, it is possible to shorten a length of an optical path of the light projected from the first light projecting unit 241a and irradiated to the first display area 491 paired therewith and a length of an optical path of the light reflected by the first display area 491 and received by the first light receiving unit 242a. Similarly, it is possible to shorten a length of an optical path of the light projected from the second light projecting unit 241b and irradiated to the second display area 492 paired therewith and a length of an optical path of the light reflected by the second display area 492 and received by the second light receiving unit 242b. In addition, similarly, it is possible to shorten a length of an optical path of the light projected from the third light projecting unit 241c and irradiated to the third display area 493 paired therewith and a length of an optical path of the light reflected by the third display area 493 and received by the third light receiving unit 242c. Accordingly, it is possible to prevent the first display area 491, the second display area 492, and the third display area 493 from being irradiated with light other than the light projected from the first light projecting unit 241a, the second light projecting unit 241b, and the third light projecting unit 241c, respectively, and it is possible to prevent the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c of the cartridge information reading device 24 from receiving light other than the light reflected by the first display area 491, the second display area 492, and the third display area 493, respectively. Therefore, the cartridge information reading device 24 can more accurately detect the coloring of each of the display areas including the first display area 491, the second

display area 492, and the third display area 493 in the information display unit 49 of the cartridge 40.

[0088] As described above, by providing the light shielding member 25 between the cartridge information reading device 24 and the inner peripheral wall 22 of the cartridge cover 20, the light projected from the cartridge information reading device 24 passes through the light transmitting portion 26 of the light shielding member 25 and is irradiated to the information display unit 49 of the cartridge 40, and the cartridge information reading device 24 receives the light reflected by the information display unit 49 and passing through the light transmitting portion 26 of the light shielding member 25. As a result, it is possible to prevent light other than the light projected from the cartridge information reading device 24 toward the cartridge 40 through the light transmitting portion 26 from reaching the cartridge 40, and it is possible to prevent light other than the light reflected by the cartridge 40 from being received by the cartridge information reading device 24. Therefore, the cartridge information reading device 24 can more accurately detect a display mode of the information display unit 49 of the cartridge 40.

[0089] In addition, the light shielding member 25 which does not allow light to be transmitted is provided between the cartridge information reading device 24 and the inner peripheral wall 22 of the cartridge cover 20, and the light projected from the light projecting unit 241 passes through the light transmitting portions 26 of the light shielding member 25 and is irradiated to the information display unit 49 of the cartridge 40. Therefore, light other than the light projected from the light projecting unit 241 can be prevented from being irradiated to the information display unit 49 of the cartridge 40. Further, the light shielding member 25 which does not allow light to be transmitted is provided between the cartridge information reading device 24 and the inner peripheral wall 22 of the cartridge cover 20, and the light receiving unit 242 of the cartridge information reading device 24 receives light reflected by the information display unit 49 and passing through the light transmitting portions 26 of the light shielding member 25. Therefore, the light receiving unit 242 of the cartridge information reading device 24 can be prevented from receiving light other than the light reflected by the information display unit 49. Accordingly, the cartridge information reading device 24 can more accurately detect the coloring of each of the display areas including the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 of the cartridge 40.

[0090] Further, in the present embodiment, the first light projecting unit 241a can project light such that the light passes through the first light transmitting portion 261a of the light shielding member 25 and the inner peripheral wall 22 of the cartridge cover 20, which are formed between the first light projecting unit 241a and the first display area 491 paired therewith, to irradiate the first display area 491 of the information display unit 49. The first light receiving unit 242a can receive light reflected by the first display area 491 of the information display unit 49 and passing through the inner peripheral wall 22 of the cartridge cover 20 and the first light transmitting portion 261a of the light shielding member 25. The second light projecting unit 241b can project light such that the light passes through the second light transmitting portion 261b of the light shielding member 25 and the inner peripheral wall 22 of the cartridge cover 20, which are formed between the second projecting unit 241b and the second display area 492 paired therewith, to irradiate the second display area 492 of the information display unit 49. The second light receiving unit 242b can receive light reflected by the second display area 492 of the information display unit 49 and passing through the inner peripheral wall 22 of the cartridge cover 20 and the second light transmitting portion 261b of the light shielding member 25. The third light projecting unit 241c can project light such that the light passes through the third light transmitting portion 261c of the light shielding member 25 and the inner peripheral wall 22 of the cartridge cover 20, which are formed between the third light projecting unit 241c and the third display area 493 paired therewith, to irradiate the third display area 493 of the information display unit 49. The third light receiving unit 242c can receive light reflected by the third display area 493 of the information display unit 49 and passing through the inner peripheral wall 22 of the cartridge cover 20 and the third light transmitting portion 261c of the light shielding member 25.

[0091] Therefore, since the light projected from the first light projecting unit 241a passes through the first light transmitting portion 261a of the light shielding member 25 and is irradiated to the first display area 491, it is possible to prevent the light projected from the first light projecting unit 241a from being irradiated to another display area of the information display unit 49, for example, the adjacent second display area 492. Similarly, since the light projected from the second light projecting unit 241b passes through the second light transmitting portion 261b of the light shielding member 25 and is irradiated to the second display area 492, it is possible to prevent the light projected from the second light projecting unit 241b from being irradiated to other display areas of the information display unit 49, for example, the adjacent first display area 491 and third display area 493. In addition, similarly, since the light projected from the third light projecting unit 241c passes through the third light transmitting portion 261c of the light shielding member 25 and is irradiated to the third display area 493, it is possible to prevent the light projected from the third light projecting unit 241c from being irradiated to another display area of the information display unit 49, for example, the adjacent second display area 492.

[0092] Further, since the light reflected by the first display area 491 passes through the first light transmitting portion 261a of the light shielding member 25 and is received by the first light receiving unit 242a, it is possible to prevent another light receiving unit, for example, the adjacent second light receiving unit 242b from receiving the light reflected by the first display area 491. Similarly, since the light reflected by the second display area 492 passes through the second light transmitting portion 261b of the light shielding member 25 and is received by the second light receiving unit 242b, it is

possible to prevent other light receiving units, for example, the adjacent first light receiving unit 242a and the third light receiving unit 242c from receiving the light reflected by the second display area 492. In addition, similarly, since the light reflected by the third display area 493 passes through the third light transmitting portion 261c of the light shielding member 25 and is received by the third light receiving unit 242c, it is possible to prevent another light receiving unit, for example, the adjacent second light receiving unit 242b from receiving the light reflected by the third display area 493.

[0093] Accordingly, the cartridge information reading device 24 can more accurately detect the coloring of each of the display areas including the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 of the cartridge 40.

(Details of Power Supply Unit)

[0094] Next, the power supply unit 10 will be described in detail with reference to Fig. 6. As illustrated in Fig. 6, in the power supply unit 10, the DC/DC converter 66, which is an example of a voltage converter capable of converting an output voltage of the power supply 61 and applying the converted voltage to the first heater 45, is connected between the first heater 45 and the power supply 61 in a state where the cartridge 40 is mounted on the power supply unit 10. The MCU 63 is connected between the DC/DC converter 66 and the power supply 61. The second heater 34 is connected to a connection node provided between the MCU 63 and the DC/DC converter 66 in the state where the cartridge 40 is mounted on the power supply unit 10. As described above, in the power supply unit 10, in the state where the cartridge 40 is mounted thereon, the second heater 34 and a series circuit of the DC/DC converter 66 and the first heater 45 are connected in parallel with respect to the power supply 61.

[0095] The DC/DC converter 66 is a booster circuit which is controlled by the MCU 63 and can boost an input voltage (for example, the output voltage of the power supply 61), and is implemented to be able to apply the input voltage or a voltage obtained by boosting the input voltage to the first heater 45. Since electric power to be supplied to the first heater 45 can be adjusted by changing the voltage to be applied to the first heater 45 by the DC/DC converter 66, an amount of the aerosol source 71 vaporized or atomized by the first heater 45 can be controlled. As the DC/DC converter 66, for example, a switching regulator which converts an input voltage into a desired output voltage by controlling an on/off time of a switching element while monitoring the output voltage can be used. When the switching regulator is used as the DC/DC converter 66, the input voltage can be directly output without boosting the input voltage by controlling the switching element. The DC/DC converter 66 may be used, for example, to set the voltage to be applied to the first heater 45 to V1 [V] to V5 [V] to be described later.

[0096] The MCU 63 is implemented to be able to acquire a temperature of the second heater 34, a temperature of the flavor source 52, or a temperature of the accommodation chamber 53 (that is, second temperature T2 to be described later) in order to control discharge to the second heater 34. In addition, the MCU 63 is preferably implemented to acquire a temperature of the first heater 45. The temperature of the first heater 45 can be used to prevent overheating of the first heater 45 and the aerosol source 71 and to highly control an amount of the aerosol source 71 vaporized or atomized by the first heater 45.

[0097] The voltage sensor 671 measures and outputs a voltage value to be applied to the first heater 45. The current sensor 672 measures and outputs a current value flowing through the first heater 45. The output of the voltage sensor 671 and the output of the current sensor 672 are input to the MCU 63. The MCU 63 acquires a resistance value of the first heater 45 based on the output of the voltage sensor 671 and the output of the current sensor 672, and acquires the temperature of the first heater 45 based on the acquired resistance value of the first heater 45.

[0098] In a configuration in which a constant current flows through the first heater 45 when the resistance value of the first heater 45 is acquired, the current sensor 672 is not necessary for the first temperature detection element 67. Similarly, in a configuration in which a constant voltage is applied to the first heater 45 when the resistance value of the first heater 45 is acquired, the voltage sensor 671 is not necessary for the first temperature detection element 67.

[0099] The voltage sensor 681 measures and outputs a voltage value to be applied to the second heater 34. The current sensor 682 measures and outputs a current value flowing through the second heater 34. The output of the voltage sensor 681 and the output of the current sensor 682 are input to the MCU 63. The MCU 63 acquires a resistance value of the second heater 34 based on the output of the voltage sensor 681 and the output of the current sensor 682, and acquires the temperature of the second heater 34 based on the acquired resistance value of the second heater 34.

[0100] Here, the temperature of the second heater 34 does not strictly coincide with the temperature of the flavor source 52 heated by the second heater 34, but can be regarded as being substantially the same as the temperature of the flavor source 52. In addition, the temperature of the second heater 34 does not strictly coincide with the temperature of the accommodation chamber 53 of the capsule 50 heated by the second heater 34, but can be regarded as being substantially the same as the temperature of the accommodation chamber 53 of the capsule 50. Therefore, the second temperature detection element 68 can also be used as a temperature detection element for detecting the temperature of the flavor source 52 or the temperature of the accommodation chamber 53 of the capsule 50.

[0101] In a configuration in which a constant current flows through the second heater 34 when the resistance value

of the second heater 34 is acquired, the current sensor 682 is not necessary for the second temperature detection element 68. Similarly, in a configuration in which a constant voltage is applied to the second heater 34 when the resistance value of the second heater 34 is acquired, the voltage sensor 681 is not necessary for the second temperature detection element 68.

[0102] Even when the second temperature detection element 68 is provided in the capsule holder 30 and the cartridge 40, the temperature of the second heater 34, the temperature of the flavor source 52, or the temperature of the accommodation chamber 53 of the capsule 50 can be acquired based on the output of the second temperature detection element 68, but the second temperature detection element 68 is preferably provided in the power supply unit 10 having a lowest replacement frequency in the aerosol suction device 1. In this way, a manufacturing cost of the capsule holder 30 and the cartridge 40 can be reduced, and the capsule holder 30 and the cartridge 40 having a higher replacement frequency than the power supply unit 10 can be provided to the user at a low cost.

[0103] Fig. 7 is a view illustrating a specific example of the power supply unit 10 illustrated in Fig. 6. Fig. 7 illustrates a specific example of a configuration in which the second temperature detection element 68 does not have the current sensor 682 and the first temperature detection element 67 does not have the current sensor 672.

[0104] As illustrated in Fig. 7, the power supply unit 10 includes: the power supply 61; the MCU 63; the LDO regulator 65; a parallel circuit C1 including a switch SW1 and a series circuit of a resistance element R1 and a switch SW2 which are connected in parallel to the switch SW1; a parallel circuit C2 including a switch SW3 and a series circuit of a resistance element R2 and a switch SW4 which are connected in parallel to the switch SW3; an operational amplifier OP1 and an analog-to-digital converter ADC1 constituting the voltage sensor 671; and an operational amplifier OP2 and an analog-to-digital converter ADC2 constituting the voltage sensor 681.

[0105] The resistance element described in the present description may be an element having a fixed electrical resistance value, for example, a resistor, a diode, or a transistor. In the example of Fig. 7, each of the resistance element R1 and the resistance element R2 is a resistor.

[0106] The switch described in the present description is a switching element such as a transistor which switches between blocking and conduction of a wiring path, and may be, for example, a bipolar transistor such as an insulated gate bipolar transistor (IGBT) or a field effect transistor such as a metal-oxide-semiconductor field-effect transistor (MOSFET). In addition, the switch described in the present description may be implemented by a relay. In the example of Fig. 7, each of the switches SW1 to SW4 is a transistor.

[0107] The LDO regulator 65 is connected to a main positive bus LU connected to a positive electrode of the power supply 61. The MCU 63 is connected to the LDO regulator 65 and a main negative bus LD connected to a negative electrode of the power supply 61. The MCU 63 is also connected to each of the switches SW1 to SW4, and executes switching control of these switches. The LDO regulator 65 steps down a voltage from the power supply 61 and outputs the voltage. An output voltage V0 of the LDO regulator 65 is also used as an operating voltage of each of the MCU 63, the DC/DC converter 66, the operational amplifier OP1, the operational amplifier OP2, and the notification unit 16.

[0108] The DC/DC converter 66 is connected to the main positive bus LU. The first heater 45 is connected to the main negative bus LD. The parallel circuit C1 is connected to the DC/DC converter 66 and the first heater 45.

[0109] The parallel circuit C2 is connected to the main positive bus LU. The second heater 34 is connected to the parallel circuit C2 and the main negative bus LD.

[0110] A non-inverting input terminal of the operational amplifier OP 1 is connected to a connection node between the parallel circuit C1 and the first heater 45. An inverting input terminal of the operational amplifier OP1 is connected to each of an output terminal of the operational amplifier OP1 and the main negative bus LD via a resistance element.

[0111] A non-inverting input terminal of the operational amplifier OP2 is connected to a connection node between the parallel circuit C2 and the second heater 34. An inverting input terminal of the operational amplifier OP2 is connected to each of an output terminal of the operational amplifier OP2 and the main negative bus LD via a resistance element.

[0112] The analog-to-digital converter ADC1 is connected to the output terminal of the operational amplifier OP1. The analog-to-digital converter ADC2 is connected to the output terminal of the operational amplifier OP2. The analog-to-digital converter ADC1 and the analog-to-digital converter ADC2 may be provided outside the MCU 63.

(MCU)

[0113] Next, a function of the MCU 63 will be described. The MCU 63 is a functional block realized by the processor executing a program stored in the memory 63a, and includes a temperature detection unit, an electric power control unit, and a notification control unit.

[0114] The temperature detection unit acquires a first temperature T1, which is the temperature of the first heater 45, based on the output of the first temperature detection element 67. In addition, the temperature detection unit acquires a second temperature T2, which is the temperature of the second heater 34, the temperature of the flavor source 52, or the temperature of the accommodation chamber 53, based on the output of the second temperature detection element 68.

[0115] In a case of a circuit example illustrated in Fig. 7, the temperature detection unit acquires an output value of the analog-to-digital converter ADC1 (voltage value to be applied to the first heater 45) in a state where the switches SW1, SW3, and SW4 are controlled to a blocked state and the switch SW2 is controlled to a conductive state, and acquires the first temperature T1 based on the output value.

[0116] A configuration may be provided in which the non-inverting input terminal of the operational amplifier OP1 is connected to a terminal of the resistance element R1 on a DC/DC converter 66 side, and the inverting input terminal of the operational amplifier OP1 is connected to a terminal of the resistance element R1 on a switch SW2 side. In this case, the temperature detection unit can acquire an output value (voltage value to be applied to the resistance element R1) of the analog-to-digital converter ADC1 in the state where the switches SW1, SW3, and SW4 are controlled to the blocked state and the switch SW2 is controlled to the conductive state, and can acquire the first temperature T1 based on the output value.

[0117] In addition, in the case of the circuit example illustrated in Fig. 7, the temperature detection unit acquires an output value of the analog-to-digital converter ADC2 (voltage value to be applied to the second heater 34) in a state where the switches SW1, SW2, and SW3 are controlled to a blocked state and the switch SW4 is controlled to a conductive state, and acquires the second temperature T2 based on the output value.

[0118] A configuration may be provided in which the non-inverting input terminal of the operational amplifier OP2 is connected to a terminal of the resistance element R2 on a main positive bus LU side, and the inverting input terminal of the operational amplifier OP2 is connected to a terminal of the resistance element R2 on a switch SW4 side. In this case, the temperature detection unit can acquire an output value (voltage value to be applied to the resistance element R2) of the analog-to-digital converter ADC2 in the state where the switches SW1, SW2, and SW3 are controlled to the blocked state and the switch SW4 is controlled to the conductive state, and can acquire the second temperature T2 based on the output value.

[0119] The notification control unit controls the notification unit 16 to notify the user of various kinds of information. For example, when it is detected that a replacement timing of the capsule 50 is reached, the notification control unit controls the notification unit 16 to execute a capsule replacement notification for prompting replacement of the capsule 50. In addition, when it is detected that a replacement timing of the cartridge 40 is reached, the notification control unit controls the notification unit 16 to execute a cartridge replacement notification for prompting replacement of the cartridge 40. Further, when it is detected that a residual amount of the power supply 61 is low, the notification control unit may control the notification unit 16 to execute a notification for prompting replacement or charging of the power supply 61, or may control the notification unit 16 to notify a control state (for example, a menthol mode or a regular mode to be described later) by the MCU 63 at a predetermined timing.

[0120] The electric power control unit controls discharge from the power supply 61 to the first heater 45 (hereinafter, also simply referred to as discharge to the first heater 45) and discharge from the power supply 61 to the second heater 34 (hereinafter, also simply referred to as discharge to the second heater 34). For example, when the power supply unit 10 has the circuit configuration illustrated in Fig. 7, the electric power control unit can realize the discharge to the first heater 45 by setting the switches SW2, SW3, and SW4 to the blocked state (that is, OFF) and setting the switch SW1 to the conductive state (that is, ON). In addition, when the power supply unit 10 has the circuit configuration illustrated in Fig. 7, the electric power control unit can realize the discharge to the second heater 34 by setting the switches SW1, SW2, and SW4 to the blocked state and setting the switch SW3 to the conductive state.

[0121] The electric power control unit causes the discharge to the first heater 45 and the second heater 34 to be executed when an aerosol generation request from the user is detected based on an output of the intake sensor 62 (that is, when a suction operation is performed by the user). As a result, in response to the aerosol generation request, heating of the aerosol source 71 by the first heater 45 (that is, generation of aerosol), and heating of the flavor source 52 by the second heater 34 are executed. In this case, the electric power control unit controls the discharge to the first heater 45 and the second heater 34 such that an amount of the flavor component to be added from the flavor source 52 (hereinafter, also simply referred to as a flavor component amount. For example, a flavor component amount W_{flavor} to be described later) converges to a predetermined target amount with respect to the aerosol (vaporized and/or atomized aerosol source 71) generated in response to the aerosol generation request. The target amount is a value which is appropriately determined, and for example, a target range of the flavor component amount may be appropriately determined, and a median within the target range may be set as the target amount. As a result, by converging the flavor component amount to the target amount, the flavor component amount can be converged to a target range having a certain range. Weight (for example, [mg]) may be used as a unit of the flavor component amount and the target amount.

[0122] For example, the electric power control unit makes a mode of the discharge to the first heater 45 and a mode of the discharge to the second heater 34 different among the following cases: a case where the menthol is not contained in any of the aerosol source 71 and the flavor source 52; a case where the menthol is contained only in the aerosol source 71, of the aerosol source 71 and the flavor source 52; and a case where the menthol is contained in both the aerosol source 71 and the flavor source 52, of the aerosol source 71 and the flavor source 52. As a result, the discharge to the first heater 45 and the second heater 34 can be appropriately controlled according to flavor types of the aerosol

source 71 of the cartridge 40 and the flavor source 52 of the capsule 50 which are mounted on the aerosol suction device 1, and aerosol containing an appropriate amount of flavor component and menthol can be stably supplied to the user. Specific examples of the mode of the discharge to the first heater 45 and the mode of the discharge to the second heater 34 in each of these cases will be described later with reference to Figs. 13 and 14.

[0123] In order to realize appropriate discharge to the first heater 45 and appropriate discharge to the second heater 34 corresponding to the flavor types of the aerosol source 71 of the cartridge 40 and the flavor source 52 of the capsule 50 which are mounted on the aerosol suction device 1, the MCU 63 is implemented to be able to determine (identify) whether each of the aerosol source 71 stored in the cartridge 40 and the flavor source 52 accommodated in the capsule 50 contains menthol. The electric power control unit controls the discharge to the first heater 45 and the discharge to the second heater 34 based on a determination result (identification result). Determination of whether each of the aerosol source 71 and the flavor source 52 contains menthol may be realized using any method. For example, as described later, the MCU 63 may determine whether each of the aerosol source 71 and the flavor source 52 contains menthol based on an operation performed on the operation unit 15. In addition, for example, as described later, the MCU 63 may determine whether each of the aerosol source 71 and the flavor source 52 contains menthol, regardless of the operation of the operation unit 15 by the user.

[0124] The MCU 63 has a plurality of modes for causing the aerosol suction device 1 to operate by controlling the discharge from the power supply 61 to the first heater 45 and the discharge from the power supply 61 to the second heater 34. The MCU 63 has, as the mode for causing the aerosol suction device 1 to operate, at least a regular mode to be described later, a menthol mode to be described later, and a sleep mode. The sleep mode has less power consumption of the aerosol suction device 1 than that in the regular mode and the menthol mode, and can transition directly or indirectly to the regular mode and the menthol mode. In addition, the MCU 63 may further have a power mode as the mode for causing the aerosol suction device 1 to operate. In such a case, the sleep mode has less power consumption of the aerosol suction device 1 than that in the power mode, and can transition directly to the power mode. Therefore, by causing the aerosol suction device 1 to transition to the sleep mode, the MCU 63 can reduce the power consumption of the aerosol suction device 1 while maintaining a state where returning to another mode is possible as necessary. In the present embodiment, when the aerosol suction device 1 operates in the sleep mode, the aerosol generation control is not executed even when the user performs the suction operation.

[0125] The regular mode is a mode in which control of the discharge to the first heater 45 and the second heater 34 is optimized when the flavor type of the aerosol source 71 of the cartridge 40 mounted on the aerosol suction device 1 is a regular type (that is, when the aerosol source 71 does not contain the menthol). The menthol mode is a mode in which the control of the discharge to the first heater 45 and the second heater 34 is optimized when the flavor type of the aerosol source 71 of the cartridge 40 mounted on the aerosol suction device 1 is a menthol type (that is, when the aerosol source 71 contains the menthol). An error mode is a mode in which the discharge from the power supply 61 to the second heater 34 is prevented, and is, for example, a mode in which the discharge from the power supply 61 to the second heater 34 is controlled not to be executed.

[0126] The above-described menthol mode may be subdivided into a first menthol mode and a second menthol mode. For example, the first menthol mode is a mode optimized when the flavor types of both the aerosol source 71 of the cartridge 40 and the flavor source 52 of the capsule 50 which are mounted on the aerosol suction device 1 are the menthol type (that is, when both the aerosol source 71 and the flavor source 52 contain the menthol). The second menthol mode is a mode optimized when only the flavor type of the aerosol source 71 of the cartridge 40, of the aerosol source 71 of the cartridge 40 and the flavor source 52 of the capsule 50 which are mounted on the aerosol suction device 1, is the menthol type (that is, when only the aerosol source 71 of the aerosol source 71 and the flavor source 52 contains the menthol).

[0127] The MCU 63 sets a target temperature of the second heater 34 (hereinafter, also referred to as a target temperature T_{cap_target}) based on whether a current mode is the regular mode or the menthol mode and a residual flavor component amount $W_{capsule}(n_{puff}\text{-}1)$ contained in the flavor source 52. In the following description, the residual flavor component amount $W_{capsule}$ may be simply referred to as a residual amount of the flavor source 52.

[0128] The electric power control unit controls the discharge from the power supply 61 to the first heater 45 and the discharge from the power supply 61 to the second heater 34 such that the temperature of the second heater 34 based on the output of the second temperature detection element 68 (hereinafter, also referred to as a temperature T_{cap_sense}) converges to the set target temperature T_{cap_target}.

[0129] As a result, the discharge to the first heater 45 and the second heater 34 can be appropriately controlled according to the flavor types of the aerosol source 71 of the cartridge 40 and the flavor source 52 of the capsule 50 which are mounted on the aerosol suction device 1, and aerosol containing an appropriate amount of flavor component and menthol can be stably supplied to the user.

[0130] Specific examples of the control of the discharge to the first heater 45 and the second heater 34 in each of these cases will be described later with reference to Figs. 13 and 14.

(Various Parameters Used for Generation of Aerosol)

[0131] Before specific discharge control to the first heater 45 and the like by the MCU 63 is described, various parameters used for the discharge control to the first heater 45 and the like by the MCU 63 will be described.

[0132] A weight [mg] of the aerosol which is generated by heating by the first heater 45 and passes through the flavor source 52 (that is, the capsule 50) for one suction operation by the user is referred to as an aerosol weight $W_{aerosol}$. Electric power required to be supplied to the first heater 45 in order to generate aerosol of an amount corresponding to the aerosol weight $W_{aerosol}$ is referred to as atomization electric power P_{liquid}. In addition, a supply time of the atomization electric power P_{liquid} to the first heater 45 is referred to as a supply time t_{sense}. From the viewpoint of preventing overheating of the first heater 45 or the like, a predetermined upper limit value t_{upper} (for example, 2.4 [s]) is set for the supply time t_{sense}, and the MCU 63 stops electric power supply to the first heater 45 regardless of the output value of the intake sensor 62 in a case where the supply time t_{sense} reaches the upper limit value t_{upper} (see steps S38 and S39 to be described later).

[0133] In addition, a weight [mg] of the flavor component contained in the flavor source 52 when the suction operation is performed n_{puff} times (here, n_{puff} is a natural number of 0 or more) by the user after the capsule 50 is mounted on the aerosol suction device 1 is described as a residual flavor component amount $W_{capsule}(n_{puff})$. A weight [mg] of the flavor component contained in the flavor source 52 of a new capsule 50 (capsule 50 which has never been subjected to the suction operation after being mounted), that is, the residual flavor component amount $W_{capsule}$ (n_{puff} = 0) is also referred to as $W_{initial}$.

[0134] In addition, a weight [mg] of the flavor component added to the aerosol passing through the flavor source 52 (that is, inside the capsule 50) for one suction operation by the user is referred to as a flavor component amount W_{flavor}. A parameter related to the temperature of the flavor source 52 is referred to as a temperature parameter $T_{capsule}$. The temperature parameter $T_{capsule}$ is a parameter indicating the above-described second temperature T2, and is, for example, a parameter indicating the temperature of the second heater 34.

[0135] It is experimentally known that the flavor component amount W_{flavor} depends on the residual flavor component amount $W_{capsule}$, the temperature parameter $T_{capsule}$, and the aerosol weight $W_{aerosol}$. Therefore, the flavor component amount W_{flavor} can be modeled by the following formula (1).

$$W_{flavor} = \beta \times (W_{capsule} \times T_{capsule}) \times \gamma \times W_{aerosol} \cdots (1)$$

[0136] β in the above-mentioned formula (1) is a coefficient indicating a ratio of a flavor component added to the aerosol when the aerosol generated in one suction operation by the user passes through the flavor source 52, and is experimentally obtained. In addition, γ in the above-mentioned formula (1) is a coefficient obtained experimentally. In a period during which one suction operation is performed, the temperature parameter $T_{capsule}$ and the residual flavor component amount $W_{capsule}$ may vary, respectively, and such γ is introduced here in order to handle these values as constant values.

[0137] The residual flavor component amount $W_{capsule}$ decreases every time the suction operation by the user is performed. Therefore, the residual flavor component amount $W_{capsule}$ is inversely proportional to the number of times the suction operation is performed (hereinafter, also referred to as the number of times of suction). In addition, in the aerosol suction device 1, since the discharge to the first heater 45 is executed every time the suction operation is performed, it can be said that the residual flavor component amount $W_{capsule}$ is inversely proportional to the number of times the discharge to the first heater 45 is executed for generating the aerosol or a cumulative value of a period during which the discharge to the first heater 45 is executed.

[0138] As can be seen from the above-mentioned formula (1), assuming that the aerosol weight $W_{aerosol}$ generated for one suction operation by the user is controlled to be substantially constant, in order to stabilize the flavor component amount W_{flavor}, it is necessary to increase the temperature parameter $T_{capsule}$ (that is, the temperature of the flavor source 52) with a decrease in the residual flavor component amount $W_{capsule}$ (that is, an increase in the number of times of suction).

[0139] Therefore, when the flavor type of the aerosol source 71 of the cartridge 40, of the aerosol source 71 of the cartridge 40 and the flavor source 52 of the capsule 50 which are mounted on the aerosol suction device 1, is the regular type (that is, when the aerosol source 71 does not contain the menthol), the MCU 63 (electric power control unit) operates in the regular mode to control the discharge to the first heater 45 and the second heater 34. When the MCU 63 operates in the regular mode, the MCU 63 controls the discharge to the second heater 34 so as to increase the temperature of the flavor source 52 with a decrease in the residual flavor component amount $W_{capsule}$ (that is, an increase in the number of times of suction) (see Figs. 13 and 14).

[0140] On the other hand, when the flavor type of the aerosol source 71 of the cartridge 40, of the aerosol source 71 of the cartridge 40 and the flavor source 52 of the capsule 50 which are mounted on the aerosol suction device 1, is the

menthol type (that is, when the aerosol source 71 contains the menthol), the MCU 63 (electric power control unit) operates in the menthol mode different from the regular mode. When the MCU 63 operates in the menthol mode, from the viewpoint of supplying an appropriate amount of menthol to the user, the MCU 63 controls the discharge to the second heater 34 so as to lower the temperature of the flavor source 52 with a decrease in the residual flavor component amount $W_{capsule}$ (that is, an increase in the number of times of suction) (see Figs. 13 and 14). As a result, it is possible to supply an appropriate amount of menthol to the user as described later.

[0141] In this case, when the temperature of the flavor source 52 is also lowered with a decrease of the residual flavor component amount $W_{capsule}$, the flavor component amount W_{flavor} is reduced. Therefore, when the temperature of the flavor source 52 is also lowered with a decrease in the residual flavor component amount $W_{capsule}$, the MCU 63 may increase the aerosol weight $W_{aerosol}$ by increasing a voltage to be applied to the first heater 45 to increase the electric power to be supplied to the first heater 45 (see Fig. 13). As a result, a decrease in the flavor component amount W_{flavor} caused by lowering the temperature of the flavor source 52 in order to supply an appropriate amount of menthol to the user can be compensated by an increase in the aerosol weight $W_{aerosol}$ generated by heating by the first heater 45, so that a decrease in the flavor component amount W_{flavor} to be supplied into a mouth of the user can be prevented, and the menthol and the flavor component can be stably supplied to the user.

(Operation of Aerosol Suction Device)

[0142] Next, an example of the operation of the aerosol suction device 1 will be described with reference to Figs. 8 to 12. The operation of the aerosol suction device 1 described below is realized by, for example, the processor of the MCU 63 executing a program stored in advance in the memory 63a.

<Power-on Control>

[0143] As illustrated in Fig. 8, when a power-on operation is performed on the operation unit 15 by the user (YES in step S1), the MCU 63 executes power-on control to switch the mode for causing the aerosol suction device 1 to operate from the sleep mode to the power mode (step S2). On the other hand, the MCU 63 waits in the sleep mode as the mode for causing the aerosol suction device 1 to operate until the power-on operation is performed on the operation unit 15 by the user (loop of NO in step S1). That is, when YES is determined in step S1, the MCU 63 switches the mode for causing the aerosol suction device 1 to operate from the sleep mode to the power mode. The power-on operation is, for example, an operation in which the operation unit 15 is pressed three times continuously within a predetermined time (for example, 2 [seconds]).

[0144] The MCU 63 may execute preheating control in which the discharge from the power supply 61 to the second heater 34 is executed such that the temperature of the second heater 34 becomes a preheating temperature set in advance (hereinafter, also referred to as a preheating temperature T_{cap_pre}) in response to switching from the sleep mode to the power mode. As a result, the temperature of the second heater 34 can be increased immediately after switching to the power mode. For example, when the MCU 63 executes the aerosol generation control in the menthol mode, the target temperature T_{cap_target} is initially set to a relatively high temperature of 80 [°C]. Therefore, although it takes a certain time period until the temperature reaches the target temperature T_{cap_target}, by executing the preheating control, the second heater 34 can be brought close to the target temperature T_{cap_target} in advance before the aerosol generation request is detected. As a result, even when the set target temperature T_{cap_target} is high, the aerosol to which the flavor is appropriately added can be stably supplied to the user immediately after the aerosol generation control is executed (for example, so-called suction start).

[0145] When the mode for causing the aerosol suction device 1 to operate transitions from the sleep mode to the power mode, the MCU 63 starts a cartridge identification process of identifying the flavor types of the aerosol source 71 of the cartridge 40 and the flavor source 52 of the capsule 50 (step S3).

<Cartridge Identification Process>

[0146] As illustrated in Fig. 9, in the cartridge identification process, the MCU 63 first determines whether it is immediately after execution of the power-on control (step S101). For example, when the cartridge identification process has not been executed even once after the power-on control is executed, the MCU 63 determines that it is immediately after execution of the power-on control (YES in step S101), proceeds to step Sill, and executes a cartridge information acquisition process to be described later. On the other hand, when the cartridge identification process has been executed one or more times after the power-on control is executed, the MCU 63 determines that it is not immediately after the execution of the power-on control (NO in step S101), and determines whether the cartridge 40 has been replaced (step S102).

[0147] The MCU 63 may detect the replacement of the cartridge 40 by any method in step S102.

[0148] For example, the MCU 63 may detect the replacement of the cartridge 40 based on an electrical resistance value between the pair of discharge terminals 12 acquired using the voltage sensor 671 and the current sensor 672. It is clear that electrical resistance values between the discharge terminals 12 which can be acquired by the MCU 63 are different between, a state where the pair of discharge terminals 12 are conductive by connecting the first heater 45 between the pair of discharge terminals 12 and a state where the pair of discharge terminals 12 are insulated by air without connecting the first heater 45 between the pair of discharge terminals 12. Therefore, the MCU 63 can detect the replacement of the cartridge 40 based on the electrical resistance value between the discharge terminals 12.

[0149] In the present embodiment, it is determined that the cartridge 40 has been replaced when it is detected, based on the electrical resistance value between the discharge terminals 12, that a state where the connection terminal 47 of the cartridge 40 is not electrically connected to the discharge terminals 12 of the power supply unit 10 is transitioned to a state where the connection terminal 47 of the cartridge 40 is electrically connected to the discharge terminals 12 of the power supply unit 10.

[0150] When the cartridge 40 has been replaced (YES in step S102), since there is a possibility that the cartridge 40 has been changed and the flavor type of the aerosol source 71 has been changed, the MCU 63 proceeds to the above-described step S111 and executes the cartridge information acquisition process to be described later.

[0151] When the cartridge 40 has not been replaced (NO in step S102), it is determined whether the cartridge replacement notification (step S47) has been executed in a residual amount updating process to be described later (step S103). Step S102 may be omitted. That is, when a negative result is determined in step S101 (NO in step S101), the MCU 63 may cause the process to proceed to step S103. By omitting step S102, the above-described function of detecting the replacement of the cartridge 40 becomes unnecessary, and thus a cost and a volume of the power supply unit 10 can be reduced.

[0152] When the cartridge replacement notification (step S47) has been executed in the residual amount updating process (YES in step S103), the cartridge 40 mounted on the aerosol suction device 1 has reached the end of its service life. Therefore, after the cartridge replacement notification (step S47) is executed, there is a possibility that the detection of the replacement of the cartridge 40 in step S102 is an erroneous detection even though the cartridge 40 has been replaced by the user. Therefore, the MCU 63 proceeds to the above-described step S111, and executes the cartridge information acquisition process to be described later.

[0153] When the cartridge replacement notification (step S47) has not been executed in the residual amount updating process to be described later (NO in step S103), it is considered that the replacement of the cartridge 40 has not been performed since a previous cartridge identification process was executed, and the flavor type of the aerosol source 71 of the cartridge 40 has not been changed from an identification result in the previous cartridge identification process. Therefore, the MCU 63 reads out the identification result of the flavor type of the aerosol source 71 in the previous cartridge identification process from the memory 63a. The MCU 63 sets an identification result of the flavor type of the aerosol source 71 to be the same as the identification result of the flavor type of the aerosol source 71 in the previous cartridge identification process (step S104). Then, the identification result of the flavor type of the aerosol source 71 in the cartridge identification process is stored in the memory 63a (step S105), and the cartridge identification process is ended.

<<Cartridge Information Acquisition Process>>

[0154] In the cartridge information acquisition process, information on the cartridge 40 mounted on the aerosol suction device 1 is acquired based on the illuminance of the light reflected by each of the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 of the cartridge 40, which is detected by the light receiving units 242 of the cartridge information reading device 24 provided in the cartridge cover 20. In the present embodiment, flavor type information on the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 can be acquired by the cartridge information acquisition process.

[0155] In the cartridge information acquisition process, the MCU 63 first controls the cartridge information reading device 24 to project light from the light projecting unit 241 toward the information display unit 49 of the cartridge 40 (step Sill). In the present embodiment, the cartridge information reading device 24 is controlled to project light from the first light projecting unit 241a toward the first display area 491, project light from the second light projecting unit 241b toward the second display area 492, and project light from the third light projecting unit 241c toward the third display area 493. In this case, light projection from the first light projecting unit 241a, light projection from the second light projecting unit 241b, and light projection from the third light projecting unit 241c may be simultaneously performed or may be separately performed in a predetermined order.

[0156] The light projected from the light projecting unit 241 passes through the light transmitting portion 26 of the light shielding member 25 and is irradiated to the information display unit 49 of the cartridge 40, and the light receiving unit 242 receives the light reflected by the information display unit 49 of the cartridge 40 and passing through the light transmitting portion 26 of the light shielding member 25. In the present embodiment, the light projected from the first

light projecting unit 241a passes through the first light transmitting portion 261a of the light shielding member 25 and is irradiated to the first display area 491 of the information display unit 49, and the first light receiving unit 242a receives the light reflected by the first display area 491 of the information display unit 49 and passing through the first light transmitting portion 261a of the light shielding member 25. The light projected from the second light projecting unit 241b passes through the second light transmitting portion 261b of the light shielding member 25 and is irradiated to the second display area 492 of the information display unit 49, and the second light receiving unit 242b receives the light reflected by the second display area 492 of the information display unit 49 and passing through the second light transmitting portion 261b of the light shielding member 25. The light projected from the third light projecting unit 241c passes through the third light transmitting portion 261c of the light shielding member 25 and is irradiated to the third display area 493 of the information display unit 49, and the third light receiving unit 242c receives the light reflected by the third display area 493 of the information display unit 49 and passing through the third light transmitting portion 261c of the light shielding member 25.

[0157] The cartridge information reading device 24 outputs signals related to the colored patterns of the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 to the MCU 63 based on the light received by the light receiving unit 242. In the present embodiment, in the first light receiving unit 242a, an electromotive force is generated according to the illuminance of the received light by the photovoltaic effect, and the first light receiving unit 242a outputs the output signal of the voltage corresponding to the illuminance of the received light to the MCU 63 by the electromotive force generated by the photovoltaic effect. Similarly, in the second light receiving unit 242b, an electromotive force is generated according to the illuminance of the received light by the photovoltaic effect, and the second light receiving unit 242b outputs the output signal of the voltage corresponding to the illuminance of the received light to the MCU 63 by the electromotive force generated by the photovoltaic effect. In addition, similarly, in the third light receiving unit 242c, an electromotive force is generated according to the illuminance of the received light by the photovoltaic effect, and the third light receiving unit 242c outputs the output signal of the voltage corresponding to the illuminance of the received light to the MCU 63 by the electromotive force generated by the photovoltaic effect.

[0158] The MCU 63 identifies the colored patterns of the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 based on the signals related to the colored patterns of the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 output from the light receiving unit 242 of the cartridge information reading device 24. In the present embodiment, the MCU 63 determines that the first display area 491 paired with the first light receiving unit 242a is white or colorless and transparent in a case where the voltage of the output signal output from the first light receiving unit 242a is equal to or higher than the predetermined voltage, and determines that the first display area 491 paired with the first light receiving unit 242a is black in a case where the voltage of the output signal output from the first light receiving unit 242a is lower than the predetermined voltage. Similarly, the MCU 63 determines that the second display area 492 paired with the second light receiving unit 242b is white or colorless and transparent in a case where the voltage of the output signal output from the second light receiving unit 242b is equal to or higher than the predetermined voltage, and determines that the second display area 492 paired with the second light receiving unit 242b is black in a case where the voltage of the output signal output from the second light receiving unit 242b is lower than the predetermined voltage. Further, the MCU 63 determines that the third display area 493 paired with the third light receiving unit 242c is white or colorless and transparent in a case where the voltage of the output signal output from the third light receiving unit 242c is equal to or higher than the predetermined voltage, and determines that the third display area 493 paired with the third light receiving unit 242c is black in a case where the voltage of the output signal output from the third light receiving unit 242c is lower than the predetermined voltage. In this way, the MCU 63 identifies the colored patterns of the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 of the cartridge 40 based on the output signals output from the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c of the cartridge information reading device 24.

[0159] The memory 63a of the MCU 63 stores an information display unit colored pattern-aerosol source correspondence table in which the colored patterns of the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 are associated with the flavor type of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40, the colored patterns being identified based on the signals related to the colored patterns of the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 output from the light receiving unit 242 of the cartridge information reading device 24.

[0160] Referring to the information display unit colored pattern-aerosol source correspondence table stored in the memory 63a, the MCU 63 acquires the information on the flavor type of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 based on the colored patterns of the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49, the colored patterns being identified based on the signals related to the colored patterns of the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 output from the light receiving unit 242 of the cartridge information reading device 24

(step S112).

[0161] In the present embodiment, as described above, in the information display unit 49 of the regular type cartridge 40 in which the aerosol source 71 not containing the menthol 80 is stored in the storage chamber 42, the first display area 491 is white or colorless and transparent, the second display area 492 is black, and the third display area 493 is white or colorless and transparent. Regarding the colored patterns of the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 of the menthol type cartridge 40 in which the aerosol source 71 containing the menthol 80 is stored in the storage chamber 42, the first display area 491 is black, the second display area 492 is white or colorless and transparent, and the third display area 493 is black. In the information display unit colored pattern-aerosol source correspondence table stored in the memory 63a, a colored pattern in which the first display area 491 is white or colorless and transparent, the second display area 492 is black, and the third display area 493 is white or colorless and transparent is associated with a matter that the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 is of a regular type which does not contain the menthol 80, and a colored pattern in which the first display area 491 is black, the second display area 492 is white or colorless and transparent, and the third display area 493 is black is associated with a matter that the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 is of a menthol type which contains the menthol 80. Referring to the information display unit colored pattern-aerosol source correspondence table stored in the memory 63a, the MCU 63 identifies that the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 is of the regular type which does not contain the menthol 80 when the colored pattern of the information display unit 49 identified based on the signals output from the cartridge information reading device 24 is a colored pattern in which the first display area 491 is white or colorless and transparent, the second display area 492 is black, and the third display area 493 is white or colorless and transparent. In addition, referring to the information display unit colored pattern-aerosol source correspondence table stored in the memory 63a, the MCU 63 identifies that the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 is of the menthol type that contains the menthol 80 when the colored pattern of the information display unit 49 identified based on the signals output from the cartridge information reading device 24 is a colored pattern in which the first display area 491 is black, the second display area 492 is white or colorless and transparent, and the third display area 493 is black. In this way, the MCU 63 acquires the information on the flavor type of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 based on the signals output from the cartridge information reading device 24.

[0162] As described above, the MCU 63 can execute the cartridge information acquisition process of acquiring the information on the cartridge 40 based on the information on the light reflected by each of the first display area 491, the second display area 492, and the third display area 493 of the information display unit 49 received by the cartridge information reading device 24. Therefore, since the information on the cartridge 40 can be acquired without using a barcode including a plurality of lines and spaces, a data matrix, or any other two-dimensional barcode in the information display unit 49, a device for detecting a barcode including a plurality of lines and spaces, a data matrix, or any other two-dimensional barcode is not required, and the size of the cartridge information reading device 24 can be reduced. As a result, the aerosol suction device 1 can acquire the information on the mounted cartridge 40 while preventing an increase in size.

[0163] Next, the MCU 63 determines whether the information on the flavor type of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 has been acquired in step S112 executed immediately before (step S113).

[0164] When the information on the flavor type of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 can be acquired in step S112 executed immediately before (YES in step S113), the flavor type of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 is set as the acquired flavor type information (step S114). Then, the process proceeds to step S105, the identification result of the flavor type of the aerosol source 71 in the cartridge identification process is stored in the memory 63a, and the cartridge identification process is ended.

[0165] When the information on the flavor type of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 cannot be acquired in step S112 executed immediately before (NO in step S113), the identification result of the flavor type of the aerosol source 71 is set as the regular type (step S115). Then, the process proceeds to step S105, the identification result of the flavor type of the aerosol source 71 in the cartridge identification process is stored in the memory 63a, and the cartridge identification process is ended.

[0166] As described above, the MCU 63 executes the cartridge identification process after the power-on operation is performed on the operation unit 15 by the user, and executes the cartridge information acquisition process in response to a transition from the state where the connection terminal 47 of the cartridge 40 is not electrically connected to the discharge terminals 12 of the power supply unit 10 to the state where the connection terminal 47 of the cartridge 40 is electrically connected to the discharge terminals 12 of the power supply unit 10.

[0167] Therefore, the cartridge information acquisition process can be executed when there is a high probability that the cartridge 40 mounted on the aerosol suction device 1 has been replaced, that is, when the state where the connection terminal 47 of the cartridge 40 is not electrically connected to the discharge terminals 12 of the power supply unit 10 is transitioned to the state where the connection terminal 47 of the cartridge 40 is electrically connected to the discharge terminals 12 of the power supply unit 10. As a result, the number of times the cartridge information acquisition process

is executed can be reduced, and the power consumption of the power supply 61 consumed by the cartridge information acquisition process can be saved.

[0168] In the present embodiment, the cartridge identification process including the cartridge information acquisition process is executed after the power-on operation is performed on the operation unit 15 by the user, that is, after the mode for causing the aerosol suction device 1 to operate is switched from the sleep mode to the power mode. Therefore, the power consumption of the power supply 61 in the sleep mode can be further reduced because the cartridge information acquisition process is not executed in the sleep mode. As a result, the power consumption of the power supply 61 can be further saved.

[0169] The aerosol suction device 1 can transmit, to the outside, the identification result of the flavor type of the aerosol source 71 stored in the memory 63a by the cartridge identification process, that is, information on whether the menthol is contained in the aerosol source 71 stored in the storage chamber 42 of the cartridge 40.

[0170] For example, the aerosol suction device 1 may be implemented such that the charge terminal 14 is a receptacle of a terminal capable of transmitting and receiving data such as a USB terminal or a micro USB terminal, and when a terminal such as a USB terminal or a micro USB terminal is connected to the charge terminal 14, the information on whether the menthol is included in the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 is transmitted to an external information terminal such as a smartphone or a computer through a cable having a terminal such as a USB terminal or a micro USB terminal.

[0171] In addition, for example, the aerosol suction device 1 may be implemented such that a wireless communication chip capable of establishing wireless communication with the outside is accommodated in the hollow portion of the power supply unit case 11, and the information on whether the menthol is contained in the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 is transmitted from the wireless communication chip to an external information terminal such as a smartphone or a computer by wireless communication.

[0172] As a result, the information on whether the menthol is contained in the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 can be confirmed by the external information terminal such as a smartphone or a computer, and thus the aerosol suction device 1 can be operated in cooperation with the external information terminal such as a smartphone or a computer.

[0173] The memory 63a of the aerosol suction device 1 can accumulate and store an identification result of an aerosol source identification process executed in the past, and may be implemented to be able to transmit the information on whether the menthol is contained in the aerosol source 71 to the outside for each of the cartridges 40 mounted on the aerosol suction device 1 in the past.

[0174] As a result, a history of the cartridges 40 mounted on the aerosol suction device 1 in the past can be transmitted to the outside, so that information such as the fragrance inhaling taste preferred by the user of the aerosol suction device 1 can be collected in the external information terminal such as a smartphone or a computer. In addition, when the user brings the aerosol suction device 1 into a store for repair or the like, the history of the cartridges 40 mounted on the aerosol suction device 1 in the past can be collected in a server of a customer service center or the like, so that a customer service of the aerosol suction device 1 can be improved by utilizing history information of the cartridges 40 mounted on the aerosol suction device 1 in the past.

<Standby Control>

[0175] As illustrated in Fig. 10, when the cartridge identification process is ended, the MCU 63 determines whether the flavor type of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 is the menthol type based on the identification result of the cartridge identification process (step S4). In the cartridge identification process, when the identification result of the flavor type of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 is set to the menthol type, the MCU 63 determines a positive result in step S4 (YES in step S4), and cause the process to proceed to step S5. Subsequently, the MCU 63 switches the mode for causing the aerosol suction device 1 to operate from the power mode to the menthol mode (step S5), and executes a menthol mode process. On the other hand, when the identification result of the flavor type of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 is not set to the menthol type in the cartridge identification process, that is, when the identification result of the flavor type of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 is set to the regular type in the cartridge identification process, the MCU 63 determines a negative result in step S4 (NO in step S4), and cause the process to proceed to step S6. Subsequently, the MCU 63 switches the mode for causing the aerosol suction device 1 to operate from the power mode to the regular mode (step S6), and executes a regular mode process.

«Menthol Mode Process»

[0176] In the menthol mode process, the MCU 63 first notifies the user that the mode is the menthol mode by the notification unit 16 (step S7). In this case, for example, the MCU 63 causes the light-emitting element 161 to emit green

light and causes the vibration element 162 to vibrate, thereby notifying that the mode is the menthol mode.

[0177] Next, the MCU 63 sets the target temperature T_{cap_target} of the second heater 34 and the atomization electric power (hereinafter, also referred to as the atomization electric power P_{liquid}) to be supplied to the first heater 45 based on the residual flavor component amount $W_{capsule}(n_{puff}-1)$ contained in the flavor source 52 (step S8), and proceeds to step S21. Here, the residual flavor component amount $W_{capsule}(n_{puff}-1)$ becomes the $W_{initial}$ when the suction operation has not been performed even once after a new capsule 50 is mounted, and becomes the residual flavor component amount $W_{capsule}(n_{puff})$ calculated by the residual amount updating process (described later) immediately before when the suction operation has been performed once or more. A specific setting example of the target temperature T_{cap_target} or the like in the menthol mode will be described later with reference to Figs. 13 and 14.

«Regular Mode Process»

[0178] In the regular mode process, the MCU 63 first notifies the user that the mode is the regular mode by the notification unit 16 (step S9). In this case, for example, the MCU 63 causes the light-emitting element 161 to emit white light and causes the vibration element 162 to vibrate, thereby notifying that the mode is the regular mode.

[0179] Next, the MCU 63 determines, based on the residual flavor component amount $W_{capsule}(n_{puff}-1)$ contained in the flavor source 52, the target temperature T_{cap_target} of the second heater 34 and the aerosol weight $W_{aerosol}$ necessary for achieving the target flavor component amount W_{flavor} (step S10). In step S10, for example, the MCU 63 calculates the aerosol weight $W_{aerosol}$ based on the following formula (2) obtained by modifying the above-mentioned formula (1), and determines the calculated aerosol weight $W_{aerosol}$.

[Math. 1]

$$W_{aerosol} = \frac{W_{flavor}}{\beta \cdot W_{capsule}(n_{puff}-1) \cdot T_{capsule} \cdot \gamma} \quad \cdots (2)$$

[0180] β and γ in the above-mentioned formula (2) are the same as β and γ in the above-mentioned formula (1), and are experimentally obtained. In addition, in the above-mentioned formula (2), the target flavor component amount W_{flavor} is set in advance by the manufacturer of the aerosol suction device 1. The residual flavor component amount $W_{capsule}(n_{puff}-1)$ in the above-mentioned formula (2) becomes the $W_{initial}$ when the suction operation has not been performed even once after a new capsule 50 is mounted, and becomes the residual flavor component amount $W_{capsule}(n_{puff})$ calculated by the residual amount updating process immediately before when the suction operation has been performed once or more.

[0181] Next, the MCU 63 sets the atomization electric power P_{liquid} to be supplied to the first heater 45 based on the aerosol weight $W_{aerosol}$ determined in step S10 (step S11). In step S11, the MCU 63 calculates the atomization electric power P_{liquid} based on, for example, the following formula (3), and sets the calculated atomization electric power P_{liquid}.

[Math. 2]

$$P_{liquid} = \frac{W_{aerosol}}{\alpha \cdot t} \quad \cdots (3)$$

[0182] α in the above-mentioned formula (3) is a coefficient experimentally obtained similarly to β and γ. In addition, the aerosol weight $W_{aerosol}$ in the above-mentioned formula (3) is the aerosol weight $W_{aerosol}$ determined in step S10. Further, t in the above-mentioned formula (3) is a supply time t_{sense} during which the atomization electric power P_{liquid} is expected to be supplied, and can be set to an upper limit value t_{upper}, for example.

[0183] Next, the MCU 63 determines whether the atomization electric power P_{liquid} determined in step S11 is equal to or less than a predetermined upper limit electric power which can be discharged from the power supply 61 to the first heater 45 at that time (step S12). When the atomization electric power P_{liquid} is equal to or less than the upper limit electric power (YES in step S12), the MCU 63 proceeds to the above-described step S21. On the other hand, when the atomization electric power P_{liquid} exceeds the upper limit electric power (NO in step S12), the MCU 63 increases the target temperature T_{cap_target} only by a predetermined amount (step S13), and returns to step S10.

[0184] That is, as can be seen from the above-mentioned formula (1), by increasing the target temperature T_{cap_target} (that is, $T_{capsule}$), the aerosol weight $W_{aerosol}$ necessary for achieving the target flavor component amount W_{flavor} can be reduced by that amount, and as a result, the atomization electric power P_{liquid} determined in the above-mentioned step S11 can be reduced. By repeating steps S10 to S13, the MCU 63 can make the determination in step S12 to be YES, which is initially determined to be NO, and can proceed to step S21 illustrated in Fig. 9.

<Discharge Control>

[0185] As illustrated in Fig. 11, next, the MCU 63 acquires a current temperature of the second heater 34 (hereinafter, also referred to as the temperature T_{cap_sense}) based on the output of the second temperature detection element 68 (step S21). The temperature T_{cap_sense}, which is the temperature of the second heater 34, is an example of the above-described temperature parameter $T_{capsule}$. Here, an example in which the temperature of the second heater 34 is used as the temperature parameter $T_{capsule}$ is described, but the temperature of the flavor source 52 or the accommodation chamber 53 may be used instead of the temperature of the second heater 34.

[0186] Next, the MCU 63 controls the discharge from the power supply 61 to the second heater 34 such that the temperature T_{cap_sense} is converged to the target temperature T_{cap_target} based on the target temperature T_{cap_target} set in the menthol mode process or the regular mode process and the acquired temperature T_{cap_sense} (step S22). In this case, the MCU 63 executes, for example, proportional-integral-differential (PID) control such that the temperature T_{cap_sense} is converged to the target temperature T_{cap_target}.

[0187] In addition, as the control to converge the temperature T_{cap_sense} to the target temperature T_{cap_target}, ON/OFF control for turning on/off electric power supply to the second heater 34, proportional (P) control, proportional-integral (PI) control, or the like may be used instead of the PID control. Further, the target temperature T_{cap_target} may have hysteresis.

[0188] Next, the MCU 63 determines whether there is an aerosol generation request (step S23). When there is no aerosol generation request (NO in step S23), the MCU 63 determines whether a predetermined period has elapsed in a state where there is no aerosol generation request (step S24). When the predetermined period has not elapsed in the state where there is no aerosol generation request (NO in step S24), the MCU 63 returns to step S21.

[0189] When the predetermined period has elapsed in the state where there is no aerosol generation request (YES in step S24), the MCU 63 stops the discharge to the second heater 34 (step S25), switches the mode for causing the aerosol suction device 1 to operate to the sleep mode (step S26), and proceeds to step S51 to be described later.

<Aerosol Generation Control>

[0190] On the other hand, when there is an aerosol generation request (YES in step S23), the MCU 63 executes the aerosol generation control. First, the MCU 63 temporarily stops the heating of the flavor source 52 by the second heater 34 (that is, the discharge to the second heater 34), and acquires the temperature T_{cap_sense} based on the output of the second temperature detection element 68 (step S30). The MCU 63 may not stop the heating of the flavor source 52 by the second heater 34 (that is, the discharge to the second heater 34) when executing step S11.

[0191] Next, the MCU 63 determines whether the acquired temperature T_{cap_sense} is higher than the set target temperature $T_{cap\_target} - \delta$ (here, $\delta \geq 0$) (step S31). This δ can be determined to any value by the manufacturer of the aerosol suction device 1. When the temperature T_{cap_sense} is higher than the target temperature $T_{cap\_target} - \delta$ (YES in step S31), the MCU 63 sets a current atomization electric power $P_{liquid} - \Delta$ (here, $\Delta > 0$) as a new atomization electric power P_{liquid} (step S32), and proceeds to step S35.

[0192] On the other hand, when the temperature T_{cap_sense} is not higher than the target temperature $T_{cap\_target} - \delta$ (NO in step S31), the MCU 63 determines whether the temperature T_{cap_sense} is lower than the target temperature $T_{cap\_target} - \delta$ (step S33). When the temperature T_{cap_sense} is lower than the target temperature $T_{cap\_target} - \delta$ (YES in step S33), the MCU 63 sets the current atomization electric power $P_{liquid} + \Delta$ as a new atomization electric power P_{liquid} (step S34), and proceeds to step S35.

[0193] On the other hand, when the temperature T_{cap_sense} is not lower than the target temperature $T_{cap\_target} - \delta$ (NO in step S33), the temperature T_{cap_sense} = the target temperature $T_{cap\_target} - \delta$, so that the MCU 63 maintains the current atomization electric power P_{liquid} and directly proceeds to step S35.

[0194] Although details will be described later with reference to Fig. 14 and the like, in the present embodiment, when the target temperature T_{cap_target} is controlled according to the menthol mode, the MCU 63 changes the target temperature T_{cap_target} from 80 [°C] to 60 [°C] at a predetermined timing. Immediately after such a change in the target temperature T_{cap_target}, there is a possibility that the temperature T_{cap_sense} (for example, 80 [°C]), which is the temperature of the second heater 34 at that time, exceeds the target temperature T_{cap_target} (that is, 60 [°C]) after the change. In such a case, the MCU 63 makes a NO determination in step S32, and executes the process of step S34 to further reduce the atomization electric power P_{liquid}. As a result, even in a case where an actual temperature of the flavor source 52, the second heater 34, or the like is higher than 60 [°C] immediately after the target temperature T_{cap_target} is changed from 80 [°C] to 60 [°C] or the like, an amount of the aerosol source 71 generated by heating by the first heater 45 and supplied to the flavor source 52 can be reduced by reducing the atomization electric power P_{liquid}. Therefore, an excessive amount of menthol can be prevented from being supplied into the mouth of the user and an appropriate amount of menthol can be stably supplied to the user.

[0195] Next, the MCU 63 notifies the user of the current mode (step S35). For example, in the case of the menthol

mode (that is, in the case where the menthol mode process is executed), in step S35, the MCU 63 notifies the user that the mode is the menthol mode by causing the light-emitting element 161 to emit green light, for example. On the other hand, in the case of the regular mode (that is, in the case where the regular mode process is executed), in step S35, the MCU 63 notifies the user that the mode is the regular mode by causing the light-emitting element 161 to emit white light, for example.

[0196] Next, the MCU 63 controls the DC/DC converter 66 such that the atomization electric power P_{liquid} set in step S33 or step S34 is supplied to the first heater 45 (step S36). Specifically, the MCU 63 controls the voltage to be applied to the first heater 45 by the DC/DC converter 66 such that the atomization electric power P_{liquid} is supplied to the first heater 45. As a result, the atomization electric power P_{liquid} is supplied to the first heater 45, the aerosol source 71 is heated by the first heater 45, and the vaporized and/or atomized aerosol source 71 is generated.

[0197] Next, the MCU 63 determines whether the aerosol generation request is ended (step S37). When the aerosol generation request is not ended (NO in step S37), the MCU 63 determines whether an elapsed time from a start of the supply of the atomization electric power P_{liquid}, that is, the supply time t_{sense} has reached the upper limit value t_{upper} (step S38). When the supply time t_{sense} has not reached the upper limit value t_{upper} (NO in step S38), the MCU 63 returns to step S36. In this case, the supply of the atomization electric power P_{liquid} to the first heater 45, that is, the generation of the vaporized and/or atomized aerosol source 71 is continued.

[0198] On the other hand, when the aerosol generation request is ended (YES in step S37), and when the supply time t_{sense} reaches the upper limit value t_{upper} (YES in step S38), the MCU 63 stops the supply of the atomization electric power P_{liquid} to the first heater 45 (that is, the discharge to the first heater 45) (step S39), and ends the aerosol generation control.

[0199] In this way, when the aerosol generation control is executed, the MCU 63 controls the discharge from the power supply 61 to the first heater 45 and the discharge from the power supply 61 to the second heater 34 in the menthol mode or the regular mode.

<Residual Amount Updating Process>

[0200] As illustrated in Fig. 12, when the aerosol generation control is ended, the MCU 63 executes the residual amount updating process of calculating the residual flavor component amount contained in the flavor source 52.

[0201] In the residual amount updating process, the MCU 63 first acquires a supply time t_{sense} during which the atomization electric power P_{liquid} is supplied (step S41). Next, the MCU 63 adds "1" to n_{puff} which is a count value of a puff number counter (step S42).

[0202] Then, the MCU 63 updates the residual flavor component amount $W_{capsule}(n_{puff})$ contained in the flavor source 52 based on the acquired supply time t_{sense}, the atomization electric power P_{liquid} supplied to the first heater 45 according to the aerosol generation request, and the target temperature T_{cap_target} set when the aerosol generation request is detected (step S43). For example, the MCU 63 calculates the residual flavor component amount $W_{capsule}(n_{puff})$ based on the following formula (4), and stores the calculated residual flavor component amount $W_{capsule}(n_{puff})$ in the memory 63a, thereby updating the residual flavor component amount $W_{capsule}(n_{puff})$.

[Math. 3]

$$\begin{aligned} & W_{capsule}(n_{puff}) \\ & = W_{initial} - \delta \cdot \sum_{i=1}^{n_{puff}-1} W_{flavor}(i) \\ & = W_{initial} - \delta \cdot \sum_{i=1}^{n_{puff}-1} \beta \cdot W_{capsule}(i) \cdot T_{capsule}(i) \cdot \gamma \cdot \alpha \cdot P_{liquid}(i) \cdot t_{sense}(i) \quad \cdots (4) \end{aligned}$$

[0203] α in the above-mentioned formula (4) is the same as α in the above-mentioned formula (3), and is experimentally obtained. β and γ in the above-mentioned formula (4) are the same as β and γ in the above-mentioned formula (1), and are experimentally obtained. In addition, δ in the above-mentioned formula (4) is the same as δ used in step S32, and is set in advance by the manufacturer of the aerosol suction device 1.

[0204] Next, the MCU 63 determines whether the updated residual flavor component amount $W_{capsule}(n_{puff})$ is less than a predetermined residual amount threshold value which is a condition for executing the capsule replacement notification (step S44). When the updated residual flavor component amount $W_{capsule}(n_{puff})$ is equal to or greater than the residual amount threshold value (NO in step S44), it is considered that the flavor component contained in the flavor source 52 (that is, in the capsule 50) still remains sufficiently, and therefore the MCU 63 directly proceeds to step S51.

[0205] On the other hand, when the updated residual flavor component amount $W_{capsule}(n_{puff})$ is less than the residual amount threshold value (YES in step S44), it is considered that the flavor component contained in the flavor source 52 was almost disappeared, and therefore the MCU 63 determines whether the number of times of replacement of the

capsule 50 after replacement of the cartridge 40 is the predetermined number of times (step S45). For example, in the present embodiment, five capsules 50 are combined with one cartridge 40 and provided to the user. In this case, in step S25, the MCU 63 determines whether the number of times of replacement of the capsule 50 after replacement of the cartridge 40 is five times.

[0206] When the number of times of replacement of the capsule 50 after replacement of the cartridge 40 is not the predetermined number of times (five times in the present embodiment) (NO in step S45), it is estimated that the residual amount of the aerosol source 71 of the cartridge 40 is equal to or more than an amount necessary to make a residual amount of an unused flavor source 52 equal to or less than the threshold value, the cartridge 40 is considered to be still in a usable state, and the MCU 63 executes capsule replacement notification (step S46). In the present embodiment, the MCU 63 executes the capsule replacement notification by causing the light-emitting element 161 to blink in green when the aerosol suction device 1 is caused to operate in the menthol mode and to blink in white when the aerosol suction device 1 is caused to operate in the regular mode.

[0207] On the other hand, when the number of times of replacement of the capsule 50 after replacement of the cartridge 40 is the predetermined number of times (five times in the present embodiment) (YES in step S45), it is estimated that the residual amount of the aerosol source 71 of the cartridge 40 is less than the amount necessary to make the residual amount of the unused flavor source 52 equal to or less than the threshold value, the cartridge 40 is considered as reached the end of its service life, and the MCU 63 executes the cartridge replacement notification (step S47). In the present embodiment, the MCU 63 executes the cartridge replacement notification by causing the light-emitting element 161 to blink in blue.

[0208] Next, the MCU 63 executes a counter reset control of resetting the count value of the puff number counter to 1, and initializes the setting of the target temperature T_{cap_target} (step S48). In order to initialize the setting of the target temperature T_{cap_target}, the MCU 63 sets the target temperature T_{cap_target} to, for example, -273 [° C] which is absolute zero. As a result, substantially, the discharge to the second heater 34 can be stopped, and the heating of the flavor source 52 by the second heater 34 can be stopped, regardless of the temperature of the second heater 34 at that time.

<Power-off Control>

[0209] Next, the MCU 63 determines whether a power-off operation is performed on the operation unit 15 by the user (step S51). In the present embodiment, the power-off operation is an operation of maintaining a state where the operation unit 15 is pressed for a predetermined time (for example, 3 [seconds]) or more. When it is considered that the power-off operation is not performed on the operation unit 15 by the user (NO in step S51), the MCU 63 returns to step S3. On the other hand, when it is considered that the power-off operation is performed on the operation unit 15 by the user (YES in step S51), the MCU 63 executes the power-off control, switches the mode for causing the aerosol suction device 1 to operate to the sleep mode (step S52), and ends a series of processes.

[0210] As described above, the MCU 63 controls the discharge from the power supply 61 to the first heater 45 and the second heater 34 based on a result of the cartridge identification process including the cartridge information acquisition process. As a result, the discharge to the first heater 45 and the second heater 34 can be appropriately controlled according to a type of the aerosol source 71 of the cartridge 40 mounted on the aerosol suction device 1, and an appropriate amount of flavor component and aerosol can be stably supplied to the user.

[0211] More specifically, the MCU 63 can control the discharge from the power supply 61 to the first heater 45 and the second heater 34 in a plurality of modes, selects one mode from the plurality of modes based on the result of the cartridge identification process including the cartridge information acquisition process, and controls the discharge from the power supply 61 to the first heater 45 and the second heater 34 in the selected mode. As a result, the discharge to the first heater 45 and the second heater 34 can be appropriately controlled according to the type of the aerosol source 71 of the cartridge 40 mounted on the aerosol suction device 1 by simple control, and an appropriate amount of flavor component and aerosol can be stably supplied to the user.

[0212] In the present embodiment, the discharge from the power supply 61 to the first heater 45 and the second heater 34 can be controlled in a plurality of modes including at least the regular mode and the menthol mode, and in the cartridge information acquisition process, when the information indicating that menthol is contained in the aerosol source 71 is acquired, the discharge from the power supply 61 to the first heater 45 and the second heater 34 is controlled in the menthol mode, and in the cartridge information acquisition process, when the information indicating that menthol is not contained in the aerosol source 71 is acquired, the discharge from the power supply 61 to the first heater 45 and the second heater 34 is controlled in the regular mode. Therefore, the discharge to the first heater 45 and the second heater 34 can be appropriately controlled according to when the aerosol source 71 of the cartridge 40 mounted on the aerosol suction device 1 contains the menthol and when the aerosol source 71 does not contain the menthol, and aerosol containing an appropriate amount of flavor component and menthol can be stably supplied to the user.

[0213] In addition, in the present embodiment, in the cartridge information acquisition process, when the information on whether the menthol is contained in the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 cannot

be acquired, the discharge from the power supply 61 to the first heater 45 and the second heater 34 is controlled in the regular mode. As a result, when the menthol is not contained in the aerosol source 71 stored in the storage chamber 42 of the cartridge 40, it is possible to reliably prevent the MCU 63 from controlling the discharge to the first heater 45 and the second heater 34 in the menthol mode. As a result, an occurrence of unintended fragrance inhaling taste caused by the aerosol source 71 which does not contain menthol being heated in the menthol mode can be prevented, and at least the fragrance inhaling taste derived from the flavor source can be stably supplied to the user.

(Specific Control Example According to Menthol Mode)

[0214] Next, a specific control example according to the above-described menthol mode will be described with reference to Figs. 13 and 14, including comparison with a control example according to the regular mode.

[0215] When at least one of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 and the flavor source 52 accommodated in the capsule 50 contains the menthol 80, the aerosol suction device 1 can supply the aerosol 72 containing the menthol 80 to the user by the suction operation of the user. In this case, it is preferable that the aerosol suction device 1 appropriately controls the discharge to the first heater 45 which is a heater which heats the aerosol source 71 stored in the cartridge 40 and the second heater 34 which is a heater which heats the capsule 50 (that is, the flavor source 52), and stably supplies an appropriate amount of menthol to the user. Hereinafter, specific control examples according to the menthol mode in which the control of the discharge to the first heater 45 and the second heater 34 is optimized in a case where both the aerosol source 71 and the flavor source 52 contain the menthol 80 and a case where only the aerosol source 71 contains the menthol will be described.

<When Both Aerosol Source and Flavor Source Contain Menthol>

[0216] First, a specific control example according to the menthol mode when both the aerosol source 71 and the flavor source 52 contain the menthol 80 will be described with reference to Fig. 13, including comparison with the control example according to the regular mode.

[0217] Here, a description will be given assuming that the suction operation is performed a predetermined number of times until the residual flavor component amount in the capsule 50 becomes less than the above-described residual amount threshold value (that is, until the residual flavor component amount in the capsule 50 substantially disappears) after a new capsule 50 is mounted on the aerosol suction device 1. In addition, it is assumed that a sufficient amount of aerosol source 71 is stored in the storage chamber 42 of the cartridge 40 while the suction operation is performed the predetermined number of times.

[0218] In each of (a), (b), and (c) of Fig. 13, a horizontal axis indicates the residual flavor component amount [mg] (that is, the residual flavor component amount $W_{capsule}$) contained in the flavor source 52 in the capsule 50. A vertical axis in (a) of Fig. 13 indicates the target temperature (that is, the target temperature T_{cap_target}) [°C] of the second heater 34, which is a heater which heats the capsule 50 (that is, the flavor source 52). A vertical axis in (b) of Fig. 13 indicates the voltage [V] to be applied to the first heater 45, which is a heater which heats the aerosol source 71 stored in the cartridge 40.

[0219] In addition, a vertical axis on a left side in (c) of Fig. 13 indicates a menthol amount [mg/puff] to be supplied into the mouth of the user by one suction operation. A vertical axis on a right side in (c) of Fig. 13 indicates the flavor component amount [mg/puff] to be supplied into the mouth of the user by one suction operation. The menthol amount to be supplied into the mouth of the user by one suction operation is also referred to as a unit supply menthol amount. In addition, the flavor component amount to be supplied into the mouth of the user by one suction operation is hereinafter also referred to as a unit supply flavor component amount.

[0220] In Fig. 13, a first period Tm1 is a certain period immediately after the capsule 50 is replaced. Specifically, the first period Tm1 is a period from when the residual flavor component amount in the capsule 50 is $W_{initial}$ to when the residual flavor component amount becomes W_{th1} set in advance by the manufacturer of the aerosol suction device 1. Here, W_{th1} is a value smaller than $W_{initial}$ and larger than W_{th2}, W_{th2} being the above-described residual amount threshold value as the condition for executing the capsule replacement notification. For example, W_{th1} can be a residual flavor component amount when the suction operation is performed about 10 times after a new capsule 50 is mounted. In addition, in Fig. 13, a second period Tm2 is a period after the first period Tm1, and specifically, is a period from when the residual flavor component amount in the capsule 50 becomes W_{th1} to when the residual flavor component amount becomes W_{th2}.

[0221] When both the aerosol source 71 and the flavor source 52 contain the menthol 80, as described above, the MCU 63 controls the discharge to the first heater 45 and the second heater 34 according to the menthol mode. Specifically, in the menthol mode in this case, as indicated by a thick solid line in (a) of Fig. 13, the MCU 63 sets the target temperature of the second heater 34 during the first period Tm1 to 80 [°C].

[0222] The target temperature (80 [°C]) of the second heater 34 during the first period Tm1 in this case is an example

of a first target temperature according to the present invention. For example, the target temperature of the second heater 34 during the first period Tm1 (that is, the first target temperature) in this case is a temperature higher than the melting point (for example, 42 [°C] to 45 [°C]) of the menthol and lower than the boiling point (for example, 212 [°C] to 216 [°C]) of the menthol. In addition, in this case, the target temperature of the second heater 34 during the first period Tm1 (that is, the first target temperature) may be a temperature equal to or lower than 90 [°C]. As a result, in the present embodiment, during the first period Tm1, the temperature of the second heater 34 (that is, the flavor source 52) is controlled to converge to 80 [°C], which is an example of the first target temperature. Therefore, the menthol 80 adsorbed by the flavor source 52 is heated to an appropriate temperature by the second heater 34 during the first period Tm1, so that rapid progress of desorption of the menthol 80 from the flavor source 52 can be prevented, and an appropriate amount of menthol can be stably supplied to the user.

[0223] Then, in the menthol mode when both the aerosol source 71 and the flavor source 52 contain the menthol 80, in the subsequent second period Tm2, the MCU 63 sets the target temperature of the second heater 34 to 60 [°C], which is lower than the target temperature in the immediately preceding first period Tm1. The target temperature (60 [°C]) of the second heater 34 during the second period Tm2 in this case is an example of a second target temperature according to the present invention. For example, the target temperature of the second heater 34 during the second period Tm2 (that is, the second target temperature) in this case is also a temperature higher than the melting point of the menthol and lower than the boiling point of the menthol. In addition, in this case, the target temperature of the second heater 34 during the second period Tm2 (that is, the second target temperature) may also be a temperature equal to or lower than 90 [°C]. As a result, in the present embodiment, during the second period Tm2, the temperature of the second heater 34 (that is, the flavor source 52) is controlled to converge to 60 [°C], which is an example of the second target temperature. Therefore, the menthol 80 adsorbed by the flavor source 52 is heated to an appropriate temperature by the second heater 34 also during the second period Tm2, so that rapid progress of desorption of the menthol 80 from the flavor source 52 can be prevented, and an appropriate amount of menthol can be stably supplied to the user.

[0224] As described above, in the menthol mode when both the aerosol source 71 and the flavor source 52 contain the menthol 80, in the second period Tm2, the temperature of the second heater 34 (that is, the flavor source 52) is controlled to converge to a temperature lower than that in the immediately preceding first period Tm1. Specifically, in the present embodiment, in the second period Tm2, the temperature of the second heater 34 (that is, the flavor source 52) is controlled to converge to 60 [°C], which is lower than 80 [°C] in the immediately preceding first period Tm1.

[0225] In the menthol mode when both the aerosol source 71 and the flavor source 52 contain the menthol 80, the MCU 63 sets the voltage to be applied to the first heater 45 during the first period Tm1 as V1 [V] as indicated by a thick solid line in (b) of Fig. 13. V1 [V] is an example of a first voltage according to the present invention, and is a voltage set in advance by the manufacturer of the aerosol suction device 1. As a result, during the first period Tm1 in this case, electric power corresponding to the voltage V1 [V] to be applied is supplied from the power supply 61 to the first heater 45, and the aerosol source 71 vaporized and/or atomized in an amount corresponding to the electric power is generated by the first heater 45.

[0226] In the menthol mode when both the aerosol source 71 and the flavor source 52 contain the menthol 80, in the subsequent second period Tm2, the MCU 63 sets the voltage to be applied to the first heater 45 as V2 [V]. V2 [V] is an example of a second voltage according to the present invention, and is a voltage higher than V1 [V] as illustrated in (b) of Fig. 13. V2 [V] is set in advance by the manufacturer of the aerosol suction device 1. For example, the MCU 63 can apply a voltage such as V1 [V] and V2 [V] to the first heater 45 by controlling the DC/DC converter 66.

[0227] As described above, for the menthol mode when both the aerosol source 71 and the flavor source 52 contain the menthol 80, the voltage (here, V2 [V]) to be applied to the first heater 45 during the second period Tm2 is higher than the voltage (here, V1 [V]) to be applied to the first heater 45 during the first period Tm1.

[0228] Therefore, in the menthol mode when both the aerosol source 71 and the flavor source 52 contain the menthol 80, in the second period Tm2, the electric power to be supplied to the first heater 45 increases as compared to that in the immediately preceding first period Tm1. Accordingly, the amount of the vaporized and/or atomized aerosol source 71 generated by the first heater 45 also increases as compared to that in the immediately preceding first period Tm1.

[0229] An example of the unit supply menthol amount in a case where both the aerosol source 71 and the flavor source 52 contain the menthol 80 and the MCU 63 controls the target temperature of the second heater 34 and the voltage to be applied to the first heater 45 according to the above-mentioned menthol mode refers to a unit supply menthol amount 131a in (c) of Fig. 13.

[0230] In addition, an example of the unit supply flavor component amount in the case where both the aerosol source 71 and the flavor source 52 contain the menthol 80 and the MCU 63 controls the target temperature of the second heater 34 and the voltage to be applied to the first heater 45 according to the above-mentioned menthol mode refers to a unit supply flavor component amount 131b in (c) of Fig. 13.

[0231] In order to compare the unit supply menthol amount 131a and the unit supply flavor component amount 131b, an example of a case where the MCU 63 controls the discharge to the first heater 45 and the second heater 34 (that is, the target temperature of the second heater 34 and the voltage to be applied to the first heater 45) according to the

regular mode even though both the aerosol source 71 and the flavor source 52 contain the menthol 80 will be described.

[0232] In the regular mode, as indicated by a thick broken line in (a) of Fig. 13, the MCU 63 gradually increases the target temperature of the second heater 34 during the first period Tm1 and the second period Tm2 to, for example, 30 [°C], 60 [°C], 70 [°C], and 85 [°C]. These target temperatures and a timing to change the target temperature are set in advance by the manufacturer of the aerosol suction device 1. In addition, as another example, the timing to change the target temperature of the second heater 34 in the regular mode may be determined based on the residual flavor component amount [mg] (that is, the residual flavor component amount $W_{capsule}$) contained in the flavor source 52 in the capsule 50.

[0233] Here, a maximum value (here, 70 [°C]) of the target temperature of the second heater 34 during the first period Tm1 in the regular mode is a temperature lower than the target temperature (here, 80 [°C]) of the second heater 34 during the first period Tm1 in the menthol mode. In addition, a minimum value (here, 70 [°C]) of the target temperature of the second heater 34 during the second period Tm2 in the regular mode is a temperature higher than the target temperature (here, 60 [°C]) of the second heater 34 during the second period Tm2 in the menthol mode.

[0234] In the regular mode, as indicated by a thick broken line in (b) of Fig. 13, the MCU 63 maintains the voltage to be applied to the first heater 45 during the first period Tm1 and the second period Tm2 at a constant V3 [V]. V3 [V] is a voltage higher than V1 [V] and lower than V2 [V], and is a voltage set in advance by the manufacturer of the aerosol suction device 1. For example, the MCU 63 can apply a voltage such as V3 [V] to the first heater 45 by controlling the DC/DC converter 66.

[0235] An example of the unit supply menthol amount in a case where both the aerosol source 71 and the flavor source 52 contain the menthol 80 and the MCU 63 controls the target temperature of the second heater 34 and the voltage to be applied to the first heater 45 according to the above-mentioned regular mode refers to a unit supply menthol amount 132a in (c) of Fig. 13.

[0236] In addition, an example of the unit supply flavor component amount in the case where both the aerosol source 71 and the flavor source 52 contain the menthol 80 and the MCU 63 controls the target temperature of the second heater 34 and the voltage to be applied to the first heater 45 according to the above-mentioned regular mode refers to a unit supply flavor component amount 132b in (c) of Fig. 13.

[0237] That is, even in the case where both the aerosol source 71 and the flavor source 52 contain the menthol 80, when the discharge to the first heater 45 and the second heater 34 (that is, the target temperature of the second heater 34 and the voltage to be applied to the first heater 45) is controlled according to the regular mode, the temperature of the flavor source 52 during the first period Tm1 becomes lower because the target temperature of the second heater 34 during the first period Tm1 is lower than that when the discharge to the first heater 45 and the second heater 34 is controlled according to the menthol mode.

[0238] Therefore, when the discharge to the first heater 45 and the like is controlled according to the regular mode in the case where both the aerosol source 71 and the flavor source 52 contain the menthol 80, a time until the flavor source 52 (specifically, the tobacco granules 521) and the menthol 80 reach an adsorption equilibrium state in the capsule 50 becomes longer than that when the discharge to the first heater 45 and the like is controlled according to the menthol mode. During this time, most of the menthol 80 derived from the aerosol source 71 is adsorbed to the flavor source 52, and the menthol 80 which can pass through the flavor source 52 is reduced.

[0239] As described above, when the discharge to the first heater 45 and the like is controlled according to the regular mode in the case where both the aerosol source 71 and the flavor source 52 contain the menthol 80, a unit supply menthol amount which can be supplied to the user during the first period Tm1 is reduced as compared with the case where the discharge to the first heater 45 and the like is controlled according to the menthol mode, as indicated by the unit supply menthol amount 131a and the unit supply menthol amount 132a. Therefore, in this way, there is a concern that a sufficient amount of menthol cannot be supplied to the user during the first period Tm1.

[0240] On the other hand, in the menthol mode when both the aerosol source 71 and the flavor source 52 contain the menthol 80, the MCU 63 sets the temperature of the second heater 34 (that is, the flavor source 52) to a temperature in the vicinity of the relatively high temperature of 80 [°C] in the first period Tm1 assumed to be a period before the flavor source 52 (specifically, the tobacco granules 521) and the menthol 80 reach the adsorption equilibrium state. As a result, during the first period Tm1, the MCU 63 can prompt the flavor source 52 (specifically, the tobacco granules 521) and the menthol 80 to reach the adsorption equilibrium state in the capsule 50 at an early stage, prevent the menthol 80 derived from the aerosol source 71 from being adsorbed to the flavor source 52, and ensure an amount of menthol 80, of the menthol 80 derived from the aerosol source 71, to be supplied into the mouth of the user without being adsorbed to the flavor source 52. Further, during the first period Tm1, the MCU 63 can also increase the menthol 80 derived from the flavor source 52, which is desorbed from the flavor source 52 (specifically, the tobacco granules 521) and is supplied into the mouth of the user by setting the second heater 34 (that is, the flavor source 52) to a high temperature. Therefore, as indicated by the unit supply menthol amount 131a, a sufficient amount of menthol can be supplied to the user from a period during which the flavor component contained in the flavor source 52 is sufficiently present (at the time of a new product).

[0241] In (c) of Fig. 13, a unit supply menthol amount 133a indicates an example of the unit supply menthol amount

in the case where both the aerosol source 71 and the flavor source 52 contain the menthol 80 and heating of the flavor source 52 by the second heater 34 is not executed. In such a case, the temperature of the second heater 34 (that is, the flavor source 52) during the first period Tm1 becomes room temperature (see R.T. in (c) of Fig. 13). Therefore, also in such a case, as illustrated in the unit supply menthol amount 133a, the temperature of the flavor source 52 during the first period Tm1 is lower than when the discharge to the first heater 45 and the like is controlled according to the menthol mode, so that a sufficient amount of menthol cannot be supplied to the user during the first period Tm1.

[0242] Therefore, in order to supply a sufficient amount of menthol to the user in the first period Tm1, the target temperature of the second heater 34 in the first period Tm1 is set high in the menthol mode. However, when the flavor source 52, which has reached a high temperature after the first period Tm1, is further continuously heated at a high temperature also during the second period Tm2, there is a concern that a large amount of menthol is supplied to the user, which may lead to a decrease in the fragrance inhaling taste.

[0243] Therefore, as described above, in the menthol mode, by setting the target temperature of the second heater 34 during the second period Tm2 to be lower than the target temperature of the second heater 34 during the first period Tm1, the flavor source 52, which has reached a high temperature after the first period Tm1, is prevented from being continuously heated at a high temperature also during the second period Tm2. As a result, as indicated by the unit supply menthol amount 131a, during the second period Tm2 assumed to be a period after the flavor source 52 (specifically, the tobacco granules 521) and the menthol 80 reach the adsorption equilibrium state, by lowering the temperature of the flavor source 52, an amount of menthol 80 which can be adsorbed to the flavor source 52 (specifically, the tobacco granules 521) can be increased, and an increase in the unit supply menthol amount can be prevented. Therefore, an appropriate amount of menthol can be supplied to the user during the second period Tm2.

[0244] In addition, in order to prevent a large amount of menthol from being supplied to the user during the second period Tm2, the target temperature of the second heater 34 during the second period Tm2 is set to be low in the menthol mode. However, when the target temperature of the second heater 34 is set to be low as described above, the increase in the unit supply menthol amount during the second period Tm2 can be prevented, but it is considered that the unit supply flavor component amount during the second period Tm2 is also reduced, and sufficient smoking sense cannot be provided to the user.

[0245] Therefore, in the menthol mode when both the aerosol source 71 and the flavor source 52 contain the menthol 80, the MCU 63 sets the voltage to be applied to the first heater 45 during the first period Tm1 as V1 [V], and sets the voltage to be applied to the first heater 45 during the subsequent second period Tm2 as V2 [V], which is higher than V1 [V]. As a result, in the second period Tm2, the voltage to be applied to the first heater 45 can be changed to the relatively high voltage of V2 [V], in accordance with the target temperature of the second heater 34 being changed to the relatively low temperature of 60 [°C]. Therefore, in the second period Tm2, the amount of the aerosol source 71 generated by heating by the first heater 45 and supplied to the flavor source 52 can be increased, and as indicated by the unit supply flavor component amount 131b, a decrease in the unit supply flavor component amount during the second period Tm2 can be prevented.

<Specific Control Example When Only Aerosol Source Contains Menthol>

[0246] Next, a specific control example by the MCU 63 when only the aerosol source 71 contains the menthol 80 will be described with reference to Fig. 14. In the menthol mode when only the aerosol source 71 contains the menthol 80, only the voltages to be applied to the first heater 45 during the first period Tm1 and the second period Tm2 are different from those in the menthol mode when both the aerosol source 71 and the flavor source 52 contain the menthol 80. Therefore, hereinafter, portions different from those illustrated in Fig. 13 will be mainly described, and description of portions similar to those illustrated in Fig. 13 will be appropriately omitted.

[0247] In the menthol mode when only the aerosol source 71 contains the menthol 80, the MCU 63 sets the voltage to be applied to the first heater 45 during the first period Tm1 as V4 [V] as indicated by a thick solid line in (b) of Fig. 14. V4 [V] is a voltage higher than V3 [V] as illustrated in (b) of Fig. 14, and is a voltage set in advance by the manufacturer of the aerosol suction device 1. As a result, during the first period Tm1 in this case, electric power corresponding to the voltage V3 [V] to be applied is supplied from the power supply 61 to the first heater 45, and the aerosol source 71 vaporized and/or atomized in an amount corresponding to the electric power is generated by the first heater 45.

[0248] In the menthol mode when only the aerosol source 71 contains the menthol 80, in the subsequent second period Tm2, the MCU 63 sets the voltage to be applied to the first heater 45 as V5 [V]. As illustrated in (b) of Fig. 14, V5 [V] is a voltage higher than V3 [V] and lower than V4 [V]. V5 [V] is set in advance by the manufacturer of the aerosol suction device 1. For example, the MCU 63 can apply a voltage such as V4 [V] and V5 [V] to the first heater 45 by controlling the DC/DC converter 66.

[0249] An example of the unit supply menthol amount in a case where only the aerosol source 71 contains the menthol 80 and the MCU 63 controls the target temperature of the second heater 34 and the voltage to be applied to the first heater 45 according to the above-mentioned menthol mode refers to a unit supply menthol amount 141a in (c) of Fig. 14.

[0250] An example of the unit supply flavor component amount in the case where only the aerosol source 71 contains the menthol 80 and the MCU 63 controls the target temperature of the second heater 34 and the voltage to be applied to the first heater 45 according to the above-mentioned menthol mode refers to a unit supply flavor component amount 141b in (c) of Fig. 14.

[0251] In addition, an example of the unit supply menthol amount in a case where only the aerosol source 71 contains the menthol 80 and the MCU 63 controls the target temperature of the second heater 34 and the voltage to be applied to the first heater 45 according to the above-mentioned regular mode refers to a unit supply menthol amount 142a in (c) of Fig. 14.

[0252] An example of the unit supply flavor component amount in the case where only the aerosol source 71 contains the menthol 80 and the MCU 63 controls the target temperature of the second heater 34 and the voltage to be applied to the first heater 45 according to the above-mentioned regular mode refers to a unit supply flavor component amount 142b in (c) of Fig. 14.

[0253] Further, an example of the unit supply menthol amount in the case where only the aerosol source 71 contains the menthol 80 and heating of the flavor source 52 by the second heater 34 is not executed refers to a unit supply menthol amount 143a in (c) of Fig. 14.

[0254] An example of the unit supply flavor component amount in the case where only the aerosol source 71 contains the menthol 80 and heating of the flavor source 52 by the second heater 34 is not executed refers to a unit supply flavor component amount 143b in (c) of Fig. 14.

[0255] That is, in the menthol mode when only the aerosol source 71 contains the menthol 80, that is, when the flavor source 52 does not contain the menthol 80, the MCU 63 sets the voltage to be applied to the first heater 45 during the first period Tm1 as V4 [V], and sets the voltage to be applied to the first heater 45 during the subsequent second period Tm2 as V5 [V], which is lower than V4 [V]. As a result, during the first period Tm1 assumed to be a period before the flavor source 52 (specifically, the tobacco granules 521) and the menthol 80 reach the adsorption equilibrium state in the capsule 50, the relatively high V4 [V] is applied to the first heater 45 (that is, a large electric power is supplied to the first heater 45), and the amount of the aerosol source 71 generated by heating by the first heater 45 and supplied to the flavor source 52 can be increased.

[0256] Therefore, during the period before the flavor source 52 and the menthol 80 reach the adsorption equilibrium state, the amount of menthol 80, of the menthol 80 derived from the aerosol source 71, to be supplied into the mouth of the user without being adsorbed to the flavor source 52 can be increased, and the flavor source 52 and the menthol 80 are promoted to reach the adsorption equilibrium state in an early stage in the capsule 50. Therefore, it is possible to stably supply an appropriate and sufficient amount of menthol to the user from a period (for example, so-called suction start) during which the flavor component contained in the flavor source 52 is sufficiently present.

[Second Embodiment]

[0257] Next, an aerosol suction device 1A as the second embodiment of the aerosol generating device of the present invention will be described with reference to Figs. 15 and 16. In the following description, the same constituent elements as those of the aerosol suction device 1 of the first embodiment are denoted by the same reference numerals, and the description thereof will be omitted or simplified. The aerosol suction device 1 according to the first embodiment and the aerosol suction device 1A according to the second embodiment are different from each other in configurations of the cartridge information reading device 24 and the light transmitting portion 26, and a part of the cartridge information acquisition process. Hereinafter, differences between the aerosol suction device 1 according to the first embodiment and the aerosol suction device 1A according to the second embodiment will be described in detail.

(Cartridge Cover and Cartridge Information Reading Device)

[0258] As illustrated in Fig. 15, in the second embodiment, the cartridge information reading device 24 includes at least one light projecting unit 241 and the same number of light receiving units 242 as the display areas of the information display unit 49 so as to be paired with each of the first display area 491, the second display area 492, and the third display area 493 of the information display unit 49 of the cartridge 40. Specifically, the light receiving units 242 of the cartridge information reading device 24 include the first light receiving unit 242a provided to be paired with the first display area 491 of the information display unit 49 of the cartridge 40, the second light receiving unit 242b provided to be paired with the second display area 492 of the information display unit 49 of the cartridge 40, and the third light receiving unit 242c provided to be paired with the third display area 493 of the information display unit 49 of the cartridge 40. In the present embodiment, the cartridge information reading device 24 includes one light projecting unit 241. The cartridge information reading device 24 may include two or more light projecting units 241.

[0259] The light projecting unit 241 of the cartridge information reading device 24 is, for example, a light-emitting element capable of projecting infrared light. The light projecting unit 241 of the cartridge information reading device 24

may be, for example, a light-emitting element capable of projecting white light.

[0260] The light receiving units 242 of the cartridge information reading device 24, that is, the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c are, for example, light-receiving elements which include a photodiode, a phototransistor, and the like and is capable of detecting an illuminance of received light.

[0261] The light projecting unit 241 can project light so as to irradiate the first display area 491, the second display area 492, and the third display area 493 of the information display unit 49.

[0262] The first light receiving unit 242a can receive the light reflected by the first display area 491 paired therewith. The second light receiving unit 242b can receive the light reflected by the second display area 492 paired therewith. The third light receiving unit 242c can receive the light reflected by the third display area 493 paired therewith.

[0263] The first light receiving unit 242a is provided at a position facing the first display area 491 paired therewith. The second light receiving unit 242b is provided at a position facing the second display area 492 paired therewith. The third light receiving unit 242c is provided at a position facing the third display area 493 paired therewith.

[0264] The light projecting unit 241, the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c are all provided between the outer peripheral wall 21 and the inner peripheral wall 22, that is, in the space portion 23 formed on the outer side of the inner peripheral wall 22. Therefore, the inner peripheral wall 22 of the cartridge cover 20 is provided between the cartridge 40 and each of the light projecting unit 241, the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c. The light shielding member 25 is provided between the inner peripheral wall 22 of the cartridge cover 20 and each of the light projecting unit 241, the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c. In this way, the light projecting unit 241, the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c are disposed to face the cartridge 40 with the inner peripheral wall 22 of the cartridge cover 20 and the light shielding member 25 interposed therebetween.

[0265] In the present embodiment, the light transmitting portions 26 include: a first light transmitting portion 262a formed between the first display area 491 of the information display unit 49 and the first light receiving unit 242a paired with the first display area 491; a second light transmitting portion 262b formed between the second display area 492 of the information display unit 49 and the second light receiving unit 242b paired with the second display area 492; a third light transmitting portion 262c formed between the third display area 493 of the information display unit 49 and the third light receiving unit 242c paired with the third display area 493; and a fourth light transmitting portion 262d formed at a position facing the light projecting unit 241.

[0266] The light projecting unit 241 can project light such that the light passes through the fourth light transmitting portion 262d of the light shielding member 25 formed at the facing position and the inner peripheral wall 22 of the cartridge cover 20 to irradiate the first display area 491, the second display area 492, and the third display area 493 of the information display unit 49. The first light receiving unit 242a can receive the light reflected by the first display area 491 of the information display unit 49 and passing through the inner peripheral wall 22 of the cartridge cover 20 and the first light transmitting portion 262a of the light shielding member 25. The second light receiving unit 242b can receive light reflected by the second display area 492 of the information display unit 49 and passing through the inner peripheral wall 22 of the cartridge cover 20 and the second light transmitting portion 262b of the light shielding member 25. The third light receiving unit 242c can receive the light reflected by the third display area 493 of the information display unit 49 and passing through the inner peripheral wall 22 of the cartridge cover 20 and the third light transmitting portion 262c of the light shielding member 25.

[0267] In the light receiving units 242 of the cartridge information reading device 24, that is, the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c, an electromotive force corresponding to the illuminance of the received light is generated by a photovoltaic effect. The light receiving units 242 of the cartridge information reading device 24, that is, the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c output an output signal of a voltage corresponding to the illuminance of the received light to the MCU 63 by the electromotive force generated by the photovoltaic effect.

[0268] Therefore, the cartridge information reading device 24 can detect the coloring of the first display area 491 of the information display unit 49 by the first light receiving unit 242a, can detect the coloring of the second display area 492 by the second light receiving unit 242b, and can detect the coloring of the third display area 493 by the third light receiving unit 242c. As a result, the cartridge information reading device 24 can detect the coloring of each of the display areas including the first display area 491, the second display area 492, and the third display area 493 of the information display unit 49 with at least one light projecting unit 241, so that it is possible to reduce the cost and the size of the light projecting unit 241.

[0269] Further, in the present embodiment, the first light receiving unit 242a is provided at a position facing the first display area 491 paired therewith, the second light receiving unit 242b is provided at a position facing the second display area 492 paired therewith, and the third light receiving unit 242c is provided at a position facing the third display area 493 paired therewith.

[0270] Therefore, the length of the optical path of the light reflected by the first display area 491 and received by the

first light receiving unit 242a, the length of the optical path of the light reflected by the second display area 492 and received by the second light receiving unit 242b, and the length of the optical path of the light reflected by the third display area 493 and received by the third light receiving unit 242c can be shortened. Accordingly, it is possible to prevent the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c of the cartridge information reading device 24 from receiving light other than the light reflected by the first display area 491, the second display area 492, and the third display area 493, respectively. Therefore, the cartridge information reading device 24 can more accurately detect the coloring of each of the display areas including the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 of the cartridge 40.

[0271] Further, in the present embodiment, the first light receiving unit 242a can receive the light reflected by the first display area 491 of the information display unit 49 and passing through the inner peripheral wall 22 of the cartridge cover 20 and the first light transmitting portion 262a of the light shielding member 25, the second light receiving unit 242b can receive the light reflected by the second display area 492 of the information display unit 49 and passing through the inner peripheral wall 22 of the cartridge cover 20 and the second light transmitting portion 262b of the light shielding member 25, and the third light receiving unit 242c can receive the light reflected by the third display area 493 of the information display unit 49 and passing through the inner peripheral wall 22 of the cartridge cover 20 and the third light transmitting portion 262c of the light shielding member 25.

[0272] Therefore, since the light reflected by the first display area 491 passes through the first light transmitting portion 262a of the light shielding member 25 and is received by the first light receiving unit 242a, it is possible to prevent another light receiving unit, for example, the adjacent second light receiving unit 242b from receiving the light reflected by the first display area 491. Similarly, since the light reflected by the second display area 492 passes through the second light transmitting portion 262b of the light shielding member 25 and is received by the second light receiving unit 242b, it is possible to prevent other light receiving units, for example, the adjacent first light receiving unit 242a and third light receiving unit 242c from receiving the light reflected by the second display area 492. In addition, similarly, since the light reflected by the third display area 493 passes through the third light transmitting portion 262c of the light shielding member 25 and is received by the third light receiving unit 242c, it is possible to prevent another light receiving unit, for example, the adjacent second light receiving unit 242b from receiving the light reflected by the third display area 493.

[0273] Accordingly, the cartridge information reading device 24 can more accurately detect the coloring of each of the display areas including the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 of the cartridge 40.

(Cartridge Information Acquisition Process)

[0274] As illustrated in Fig. 16, in the cartridge information acquisition process of the cartridge identification process, the MCU 63 first controls the cartridge information reading device 24 to project light in a predetermined light projecting pattern from the light projecting unit 241 toward the information display unit 49 of the cartridge 40 (step S211). For example, the cartridge information reading device 24 is controlled to project light from the light projecting unit 241 toward the information display unit 49 in a light projecting pattern in which lighting for a predetermined time and turning off for a predetermined time are repeated a predetermined number of times.

[0275] The light projected from the light projecting unit 241 passes through the light transmitting portion 26 of the light shielding member 25 and is irradiated to the information display unit 49 of the cartridge 40, and the light receiving unit 242 receives the light reflected by the information display unit 49 of the cartridge 40 and passing through the light transmitting portion 26 of the light shielding member 25. In the present embodiment, the first light receiving unit 242a receives the light which is projected from the light projecting unit 241, reflected by the first display area 491 of the information display unit 49, and passes through the first light transmitting portion 262a of the light shielding member 25. The second light receiving unit 242b receives the light which is projected from the light projecting unit 241, reflected by the second display area 492 of the information display unit 49, and passes through the second light transmitting portion 262b of the light shielding member 25. The third light receiving unit 242c receives the light which is projected from the light projecting unit 241, reflected by the third display area 493 of the information display unit 49, and passes through the third light transmitting portion 262c of the light shielding member 25.

[0276] The cartridge information reading device 24 outputs an output signal which is based on the light received by the light receiving unit 242 to the MCU 63. In the present embodiment, in the first light receiving unit 242a, an electromotive force is generated according to the illuminance of the received light by the photovoltaic effect, and the first light receiving unit 242a outputs the output signal of the voltage corresponding to the illuminance of the received light to the MCU 63 by the electromotive force generated by the photovoltaic effect. Similarly, in the second light receiving unit 242b, an electromotive force is generated according to the illuminance of the received light by the photovoltaic effect, and the second light receiving unit 242b outputs the output signal of the voltage corresponding to the illuminance of the received light to the MCU 63 by the electromotive force generated by the photovoltaic effect. In addition, similarly, in the third light receiving unit 242c, an electromotive force is generated according to the illuminance of the received light by the photo-

voltaic effect, and the third light receiving unit 242c outputs the output signal of the voltage corresponding to the illuminance of the received light to the MCU 63 by the electromotive force generated by the photovoltaic effect.

[0277] The MCU 63 determines whether the light received by the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c is the light of the predetermined light projecting pattern projected from the light projecting unit 241 based on the output signal output from each of the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c of the cartridge information reading device 24 (step S212). For example, in a case where the voltage of the output signal output from each of the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c is equal to or higher than a lighting lower limit voltage which is a lower limit voltage output from each of the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c when the light projecting unit 241 is lit, the MCU 63 determines that the light projecting unit 241 is lit. In a case where the voltage of the output signal output from each of the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c is lower than the lighting lower limit voltage, the MCU 63 determines that the light projecting unit 241 is turned off. Then, the MCU 63 determines whether the light projecting pattern of the light projecting unit 241 generated for each of the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c matches the predetermined light projecting pattern projected from the light projecting unit 241 based on the light received by each of the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c. Then, in a case where all the light projecting patterns of the light projecting unit 241 generated for each of the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c match the predetermined light projecting pattern projected from the light projecting unit 241, the MCU 63 determines that the light received by the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c is the light of the predetermined light projecting pattern projected from the light projecting unit 241 (YES in step S212). On the other hand, in a case where none of the light projecting patterns of the light projecting unit 241 generated for each of the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c matches the predetermined light projecting pattern projected from the light projecting unit 241, the MCU 63 determines that the light received by the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c is not the light of the predetermined light projecting pattern projected from the light projecting unit 241 (NO in step S212).

[0278] In a case where it is determined that the light received by the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c is not the light of the predetermined light projecting pattern projected from the light projecting unit 241 (NO in step S212), the MCU 63 increments a light receiving unit error count Nerr by 1 to Nerr+1 (step S221).

[0279] Subsequently, the MCU 63 determines whether the light receiving unit error count Nerr is equal to or less than a predetermined count (step S222). In a case where the light receiving unit error count Nerr is equal to or less than the predetermined count (YES in step S222), the MCU 63 returns to step S211, and controls the cartridge information reading device 24 to project light in a predetermined light projecting pattern from the light projecting unit 241 toward the information display unit 49 of the cartridge 40 again. In this case, light projecting patterns of the light projected from the light projecting unit 241 may be the same light projecting pattern or may be different light projecting patterns according to a numerical value of the light receiving unit error count Nerr.

[0280] In a case where the light receiving unit error count Nerr is not equal to or less than the predetermined count, that is, is greater than the predetermined count (NO in step S222), the MCU 63 determines that the cartridge information acquisition process cannot be executed, and sets the identification result of the flavor type of the aerosol source 71 to the regular type (step S232). Then, the process proceeds to step S233 to reset the light receiving unit error count Nerr to zero, then the process proceeds to step S105 to store the identification result of the flavor type of the aerosol source 71 in the cartridge identification process in the memory 63a, and the cartridge identification process is ended.

[0281] In a case where it is determined that the light received by the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c is the light of the predetermined light projecting pattern projected from the light projecting unit 241 (YES in step S212), the MCU 63 acquires the information on the flavor type of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 based on the light received by the light receiving unit 242 of the cartridge information reading device 24 (step S213).

[0282] In step S213, the MCU 63 first identifies the colored patterns of the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 based on the light received by the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c. In the present embodiment, in a case where the voltage of the output signal output from the first light receiving unit 242a when the light projecting unit 241 is lit is equal to or higher than the predetermined voltage, the MCU 63 determines that the first display area 491 paired therewith is white or colorless and transparent, and in a case where the voltage of the output signal output from the first light receiving unit 242a when the light projecting unit 241 is lit is lower than the predetermined voltage, the MCU 63 determines that the first display area 491 paired therewith is black. Similarly, in a case where the voltage of the output signal output from the second light receiving unit 242b when the light projecting unit 241 is lit is equal to or higher than

the predetermined voltage, the MCU 63 determines that the second display area 492 paired therewith is white or colorless and transparent, and in a case where the voltage of the output signal output from the second light receiving unit 242b when the light projecting unit 241 is lit is lower than the predetermined voltage, the MCU 63 determines that the second display area 492 paired therewith is black. Further, in a case where the voltage of the output signal output from the third light receiving unit 242c when the light projecting unit 241 is lit is equal to or higher than the predetermined voltage, the MCU 63 determines that the third display area 493 paired therewith is white or colorless and transparent, and in a case where the voltage of the output signal output from the third light receiving unit 242c when the light projecting unit 241 is lit is lower than the predetermined voltage, the MCU 63 determines that the third display area 493 paired therewith is black. In this way, the MCU 63 identifies the colored patterns of the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 of the cartridge 40 based on the output signals output from the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c of the cartridge information reading device 24.

[0283] The memory 63a of the MCU 63 stores an information display unit colored pattern-aerosol source correspondence table in which the colored patterns of the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 are associated with the flavor type of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40, the colored patterns being identified based on the signals related to the colored patterns of the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 output from the light receiving unit 242 of the cartridge information reading device 24.

[0284] Referring to the information display unit colored pattern-aerosol source correspondence table stored in the memory 63a, the MCU 63 acquires the information on the flavor type of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 based on the colored patterns of the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 identified based on the signal output from the light receiving unit 242 of the cartridge information reading device 24.

[0285] In the present embodiment, as described above, in the information display unit 49 of the regular type cartridge 40 in which the aerosol source 71 not containing the menthol 80 is stored in the storage chamber 42, the first display area 491 is white or colorless and transparent, the second display area 492 is black, and the third display area 493 is white or colorless and transparent. Regarding the colored patterns of the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 of the menthol type cartridge 40 in which the aerosol source 71 containing the menthol 80 is stored in the storage chamber 42, the first display area 491 is black, the second display area 492 is white or colorless and transparent, and the third display area 493 is black. In the information display unit colored pattern-aerosol source correspondence table stored in the memory 63a, a colored pattern in which the first display area 491 is white or colorless and transparent, the second display area 492 is black, and the third display area 493 is white or colorless and transparent is associated with a matter that the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 is of a regular type which does not contain the menthol 80, and a colored pattern in which the first display area 491 is black, the second display area 492 is white or colorless and transparent, and the third display area 493 is black is associated with a matter that the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 is of a menthol type which contains the menthol 80. Referring to the information display unit colored pattern-aerosol source correspondence table stored in the memory 63a, the MCU 63 identifies that the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 is of the regular type which does not contain the menthol 80 when the colored pattern of the information display unit 49 identified based on the signals output from the cartridge information reading device 24 is a colored pattern in which the first display area 491 is white or colorless and transparent, the second display area 492 is black, and the third display area 493 is white or colorless and transparent. In addition, referring to the information display unit colored pattern-aerosol source correspondence table stored in the memory 63a, the MCU 63 identifies that the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 is of the menthol type that contains the menthol 80 when the colored pattern of the information display unit 49 identified based on the signals output from the cartridge information reading device 24 is a colored pattern in which the first display area 491 is black, the second display area 492 is white or colorless and transparent, and the third display area 493 is black. In this way, the MCU 63 acquires the information on the flavor type of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 based on the signals output from the cartridge information reading device 24.

[0286] Next, the MCU 63 determines whether the information on the flavor type of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 has been acquired in step S213 executed immediately before (step S214).

[0287] When the information on the flavor type of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 can be acquired in step S213 executed immediately before (YES in step S214), the flavor type of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 is set as the acquired flavor type information (step S231). Then, the process proceeds to step S233 to reset the light receiving unit error count Nerr to zero, then the process proceeds to step S105 to store the identification result of the flavor type of the aerosol source 71 in the cartridge identification process in the memory 63a, and the cartridge identification process is ended.

[0288] When the information on the flavor type of the aerosol source 71 stored in the storage chamber 42 of the

cartridge 40 cannot be acquired in step S214 executed immediately before (NO in step S214), the process proceeds to step S232, and the identification result of the flavor type of the aerosol source 71 is set to the regular type. Then, the process proceeds to step S233 to reset the light receiving unit error count Nerr to zero, then the process proceeds to step S105 to store the identification result of the flavor type of the aerosol source 71 in the cartridge identification process in the memory 63a, and the cartridge identification process is ended.

[0289] As described above, in a case where the light received by the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c is not the light of the predetermined light projecting pattern projected from the light projecting unit 241, the MCU 63 returns to step S211, controls the cartridge information reading device 24 to project light in the same or a different predetermined light projecting pattern from the light projecting unit 241 toward the information display unit 49 of the cartridge 40 again, and in a case where the light received by the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c is the light of the predetermined light projecting pattern projected from the light projecting unit 241, the MCU 63 acquires the information displayed on the information display unit 49 based on the light received by the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c. Therefore, when the information displayed on the information display unit 49 is to be acquired based on the light received by the first light receiving unit 242a, the second light receiving unit 242b, and the third light receiving unit 242c of the cartridge information reading device 24, it is possible to reduce an influence of light other than the light projected from the light projecting unit 241 and to acquire the information displayed on the information display unit 49 more accurately.

[Third Embodiment]

[0290] Next, an aerosol suction device 1B as the third embodiment of the aerosol generating device of the present invention will be described with reference to Figs. 17 and 18. In the following description, the same constituent elements as those of the aerosol suction device 1 of the first embodiment are denoted by the same reference numerals, and the description thereof will be omitted or simplified. The aerosol suction device 1 of the first embodiment and the aerosol suction device 1B of the third embodiment are different from each other in configurations of the cartridge information reading device 24 and the light transmitting portion 26, and a part of the cartridge information acquisition process. Hereinafter, differences between the aerosol suction device 1 of the first embodiment and the aerosol suction device 1B of the third embodiment will be described in detail.

(Cartridge Cover and Cartridge Information Reading Device)

[0291] As illustrated in Fig. 17, in the third embodiment, the cartridge information reading device 24 includes at least one light receiving unit 242 and the same number of light projecting units 241 as the display areas of the information display unit 49 so as to be paired with each of the first display area 491, the second display area 492, and the third display area 493 of the information display unit 49 of the cartridge 40. Specifically, the light projecting units 241 of the cartridge information reading device 24 include a first light projecting unit 241a provided to be paired with the first display area 491 of the information display unit 49 of the cartridge 40, a second light projecting unit 241b provided to be paired with the second display area 492 of the information display unit 49 of the cartridge 40, and a third light projecting unit 241c provided to be paired with the third display area 493 of the information display unit 49 of the cartridge 40. In the present embodiment, the cartridge information reading device 24 includes one light receiving unit 242. The cartridge information reading device 24 may include two or more light receiving units 242.

[0292] The light projecting units 241 of the cartridge information reading device 24, that is, the first light projecting unit 241a, the second light projecting unit 241b, and the third light projecting unit 241c are, for example, light-emitting elements capable of projecting infrared light. The light projecting units 241 of the cartridge information reading device 24, that is, the first light projecting unit 241a, the second light projecting unit 241b, and the third light projecting unit 241c may be, for example, light-emitting elements capable of projecting white light.

[0293] The light receiving units 242 of the cartridge information reading device 24 are, for example, light-receiving elements that include a photodiode, a phototransistor, and the like and is capable of detecting an illuminance of received light.

[0294] The first light projecting unit 241a can project light so as to irradiate the first display area 491 paired therewith, the second light projecting unit 241b can project light so as to irradiate the second display area 492 paired therewith, and the third light projecting unit 241c can project light so as to irradiate the third display area 493 paired therewith.

[0295] The first light projecting unit 241a is provided at a position facing the first display area 491 paired therewith. The second light projecting unit 241b is provided at a position facing the second display area 492 paired therewith. The third light projecting unit 241c is provided at a position facing the third display area 493 paired therewith.

[0296] The light receiving unit 242 can receive the light reflected by the first display area 491, the light reflected by the second display area 492, and the light reflected by the third display area 493.

[0297] The first light projecting unit 241a, the second light projecting unit 241b, the third light projecting unit 241c, and the light receiving unit 242 are all provided between the outer peripheral wall 21 and the inner peripheral wall 22, that is, in the space portion 23 formed on the outer side of the inner peripheral wall 22. Therefore, the inner peripheral wall 22 of the cartridge cover 20 is provided between the cartridge 40 and the light projecting unit 241, the first light projecting unit 241a, the second light projecting unit 241b, the third light projecting unit 241c, and the light receiving unit 242. The light shielding member 25 is provided between the inner peripheral wall 22 of the cartridge cover 20 and the first light projecting unit 241a, the second light projecting unit 241b, the third light projecting unit 241c, and the light receiving unit 242. In this way, the first light projecting unit 241a, the second light projecting unit 241b, the third light projecting unit 241c, and the light receiving unit 242 are disposed to face the cartridge 40 with the inner peripheral wall 22 of the cartridge cover 20 and the light shielding member 25 interposed therebetween.

[0298] In the present embodiment, the light transmitting portions 26 include: a first light transmitting portion 263a formed between the first display area 491 of the information display unit 49 and the first light projecting unit 241a paired with the first display area 491; a second light transmitting portion 263b formed between the second display area 492 of the information display unit 49 and the second light projecting unit 241b paired with the second display area 492; a third light transmitting portion 263c formed between the third display area 493 of the information display unit 49 and the third light projecting unit 241c paired with the third display area 493; and a fourth light transmitting portion 263d formed at a position facing the light receiving unit 242.

[0299] The first light projecting unit 241a can project light such that the light passes through the first light transmitting portion 263a of the light shielding member 25 formed between the first light projecting unit 241a and the first display area 491 paired therewith and the inner peripheral wall 22 of the cartridge cover 20 to irradiate the first display area 491 of the information display unit 49, the second light projecting unit 241b can project light such that the light passes through the second light transmitting portion 263b of the light shielding member 25 formed between the second light projecting unit 241b and the second display area 492 paired therewith and the inner peripheral wall 22 of the cartridge cover 20 to irradiate the second display area 492 of the information display unit 49, and the third light projecting unit 241c can project light such that the light passes through the third light transmitting portion 263c of the light shielding member 25 formed between the third light projecting unit 241c and the third display area 493 paired therewith and the inner peripheral wall 22 of the cartridge cover 20 to irradiate the third display area 493 of the information display unit 49.

[0300] The light receiving unit 242 can receive the light reflected by the first display area 491 of the information display unit 49 and passing through the inner peripheral wall 22 of the cartridge cover 20 and the fourth light transmitting portion 263d of the light shielding member 25, the light reflected by the second display area 492 of the information display unit 49 and passing through the inner peripheral wall 22 of the cartridge cover 20 and the fourth light transmitting portion 263d of the light shielding member 25, and the light reflected by the third display area 493 of the information display unit 49 and passing through the inner peripheral wall 22 of the cartridge cover 20 and the fourth light transmitting portion 263d of the light shielding member 25.

[0301] In the light receiving unit 242, an electromotive force corresponding to the illuminance of the received light is generated by the photovoltaic effect. The light receiving unit 242 outputs an output signal of a voltage corresponding to the illuminance of the received light to the MCU 63 by the electromotive force generated by the photovoltaic effect.

[0302] Therefore, the cartridge information reading device 24 can detect the coloring of the first display area 491 of the information display unit 49 by receiving the light projected from the first light projecting unit 241a and reflected by the first display area 491 of the information display unit 49 by the light receiving unit 242, can detect the coloring of the second display area 492 of the information display unit 49 by receiving the light projected from the second light projecting unit 241b and reflected by the second display area 492 of the information display unit 49 by the light receiving unit 242, and can detect the coloring of the third display area 493 of the information display unit 49 by receiving the light projected from the third light projecting unit 241c and reflected by the third display area 493 of the information display unit 49 by the light receiving unit 242. As a result, the cartridge information reading device 24 can detect the coloring of the first display area 491, the second display area 492, and the third display area 493 of the information display unit 49 with at least one light receiving unit 242, so that it is possible to reduce the cost and the size of the light receiving unit 242.

[0303] Further, in the present embodiment, the first light projecting unit 241a is provided at a position facing the first display area 491 paired therewith, the second light projecting unit 241b is provided at a position facing the second display area 492 paired therewith, and the third light projecting unit 241c is provided at a position facing the third display area 493 paired therewith.

[0304] Therefore, it is possible to shorten the length of the optical path of the light projected from the first light projecting unit 241a and irradiated to the first display area 491 paired therewith, the length of the optical path of the light projected from the second light projecting unit 241b and irradiated to the second display area 492 paired therewith, and the length of the optical path of the light projected from the third light projecting unit 241c and irradiated to the third display area 493 paired therewith. Accordingly, an accuracy of the illuminance of the light irradiated to the first display area 491, the second display area 492, and the third display area 493 is improved, and an accuracy of the illuminance of the light reflected by the first display area 491, the second display area 492, and the third display area 493 is improved, so that

the cartridge information reading device 24 can more accurately detect the coloring of each of the display areas including the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 of the cartridge 40 based on the illuminance of the light received by the light receiving unit 242.

[0305] Further, in the present embodiment, the first light projecting unit 241a can project light such that the light passes through the first light transmitting portion 263a of the light shielding member 25 formed between the first light projecting unit 241a and the first display area 491 paired therewith and the inner peripheral wall 22 of the cartridge cover 20 to irradiate the first display area 491 of the information display unit 49, the second light projecting unit 241b can project light such that the light passes through the second light transmitting portion 263b of the light shielding member 25 formed between the second light projecting unit 241b and the second display area 492 paired therewith and the inner peripheral wall 22 of the cartridge cover 20 to irradiate the second display area 492 of the information display unit 49, and the third light projecting unit 241c can project light such that the light passes through the third light transmitting portion 263c of the light shielding member 25 formed between the third light projecting unit 241c and the third display area 493 paired therewith and the inner peripheral wall 22 of the cartridge cover 20 to irradiate the third display area 493 of the information display unit 49.

[0306] Therefore, since the light projected from the first light projecting unit 241a passes through the first light transmitting portion 263a of the light shielding member 25 and is irradiated to the first display area 491, it is possible to prevent the light projected from the first light projecting unit 241a from being irradiated to another display area of the information display unit 49, for example, the adjacent second display area 492. Similarly, since the light projected from the second light projecting unit 241b passes through the second light transmitting portion 263b of the light shielding member 25 and is irradiated to the second display area 492, it is possible to prevent the light projected from the second light projecting unit 241b from being irradiated to other display areas of the information display unit 49, for example, the adjacent first display area 491 and third display area 493. In addition, similarly, since the light projected from the third light projecting unit 241c passes through the third light transmitting portion 263c of the light shielding member 25 and is irradiated to the third display area 493, it is possible to prevent the light projected from the third light projecting unit 241c from being irradiated to another display area of the information display unit 49, for example, the adjacent second display area 492.

[0307] Accordingly, the cartridge information reading device 24 can more accurately detect the coloring of each of the display areas including the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 of the cartridge 40.

(Cartridge Information Acquisition Process)

[0308] As illustrated in Fig. 18, in the cartridge information acquisition process of the cartridge identification process, the MCU 63 first controls the cartridge information reading device 24 to project light in a predetermined light projecting pattern from the first light projecting unit 241a toward the first display area 491 of the information display unit 49 (step S311). For example, the cartridge information reading device 24 is controlled to project light from the first light projecting unit 241a toward the first display area 491 of the information display unit 49 in a light projecting pattern in which lighting for a predetermined time and turning off for a predetermined time are repeated a predetermined number of times.

[0309] The light projected from the first light projecting unit 241a passes through the first light transmitting portion 263a of the light shielding member 25 and is irradiated to the first display area 491 of the information display unit 49, and the light receiving unit 242 receives the light reflected by the first display area 491 of the information display unit 49 and passing through the fourth light transmitting portion 263d of the light shielding member 25.

[0310] In the light receiving unit 242, an electromotive force is generated according to the illuminance of the received light by the photovoltaic effect, and the light receiving unit 242 outputs an output signal of a voltage corresponding to the illuminance of the received light to the MCU 63 by the electromotive force generated by the photovoltaic effect.

[0311] The MCU 63 determines whether the light received by the light receiving unit 242 is the light of the predetermined light projecting pattern projected from the first light projecting unit 241a based on the output signal output from the light receiving unit 242 of the cartridge information reading device 24 (step S312). For example, in a case where the voltage of the output signal output from the light receiving unit 242 is equal to or higher than a lighting lower limit voltage which is a lower limit voltage output from the light receiving unit 242 when the first light projecting unit 241a is lit, the MCU 63 determines that the first light projecting unit 241a is lit, and in a case where the voltage of the output signal output from the light receiving unit 242 is lower than the lighting lower limit voltage, the MCU 63 determines that the first light projecting unit 241a is turned off. Then, the MCU 63 determines whether the light projecting pattern of the first light projecting unit 241a generated based on the light received by the light receiving unit 242 matches the predetermined light projecting pattern projected from the first light projecting unit 241a. Then, in a case where the light projecting pattern of the first light projecting unit 241a generated based on the light received by the light receiving unit 242 matches the predetermined light projecting pattern projected from the first light projecting unit 241a, the MCU 63 determines that the light received by the light receiving unit 242 is the light of the predetermined light projecting pattern projected from the first light projecting unit 241a (YES in step S312). On the other hand, in a case where the light projecting pattern of the first light projecting

unit 241a generated based on the light received by the light receiving unit 242 does not match the predetermined light projecting pattern projected from the first light projecting unit 241a, the MCU 63 determines that the light received by the light receiving unit 242 is not the light of the predetermined light projecting pattern projected from the first light projecting unit 241a (NO in step S312).

[0312] In a case where it is determined that the light received by the light receiving unit 242 is not the light of the predetermined light projecting pattern projected from the first light projecting unit 241a (NO in step S312), the MCU 63 increments a first light projecting unit error count Nerr1 by 1 to Nerr1+1 (step S313).

[0313] Subsequently, the MCU 63 determines whether the first light projecting unit error count Nerr1 is equal to or less than a predetermined count (step S314). In a case where the first projecting unit error count Nerr1 is equal to or less than the predetermined count (YES in step S314), the MCU 63 returns to step S311, and controls the cartridge information reading device 24 to project light in a predetermined light projecting pattern from the first light projecting unit 241a toward the first display area 491 of the information display unit 49 again. In this case, the light projecting pattern of the light projected from the first light projecting unit 241a may be the same light projecting pattern or may be a different light projecting pattern according to a numerical value of the first light projecting unit error count Nerr1.

[0314] In a case where the first light projecting unit error count Nerr1 is not equal to or less than the predetermined count, that is, is greater than the predetermined count (NO in step S314), the MCU 63 determines that the cartridge information acquisition process cannot be executed, proceeds to step S352, and sets the identification result of the flavor type of the aerosol source 71 to the regular type. Then, the process proceeds to step S353 to reset the first light projecting unit error count Nerr1, as well as a second light projecting unit error count Nerr2 and a third light projecting unit error count Nerr3 to be described later to zero, then the process proceeds to step S105 to store the identification result of the flavor type of the aerosol source 71 in the cartridge identification process in the memory 63a, and the cartridge identification process is ended.

[0315] In a case where it is determined that the light received by the light receiving unit 242 is the light of the predetermined light projecting pattern projected from the first light projecting unit 241a (YES in step S312), the MCU 63 detects the coloring of the first display area 491 of the information display unit 49 based on the light received by the light receiving unit 242 of the cartridge information reading device 24 (step S315).

[0316] In step S315, in a case where the voltage of the output signal output from the light receiving unit 242 when the first light projecting unit 241a is lit is equal to or higher than the predetermined voltage, the MCU 63 determines that the first display area 491 paired therewith is white or colorless and transparent, and in a case where the voltage of the output signal output from the light receiving unit 242 when the first light projecting unit 241a is lit is lower than the predetermined voltage, the MCU 63 determines that the first display area 491 paired therewith is black. Then, the process proceeds to step S321.

[0317] In step S321, the MCU 63 controls the cartridge information reading device 24 to project light in a predetermined light projecting pattern from the second light projecting unit 241b toward the second display area 492 of the information display unit 49. For example, the cartridge information reading device 24 is controlled to project light from the second light projecting unit 241b toward the second display area 492 of the information display unit 49 in a light projecting pattern in which lighting for a predetermined time and turning off for a predetermined time are repeated a predetermined number of times. In this case, the light projecting pattern of the light projected from the second light projecting unit 241b may be the same as or different from the light projecting pattern of the light projected from the first light projecting unit 241a.

[0318] The light projected from the second light projecting unit 241b passes through the second light transmitting portion 263b of the light shielding member 25 and is irradiated to the second display area 492 of the information display unit 49, and the light receiving unit 242 receives the light reflected by the second display area 492 of the information display unit 49 and passing through the fourth light transmitting portion 263d of the light shielding member 25.

[0319] In the light receiving unit 242, an electromotive force is generated according to the illuminance of the received light by the photovoltaic effect, and the light receiving unit 242 outputs an output signal of a voltage corresponding to the illuminance of the received light to the MCU 63 by the electromotive force generated by the photovoltaic effect.

[0320] The MCU 63 determines whether the light received by the light receiving unit 242 is the light of the predetermined light projecting pattern projected from the second light projecting unit 241b based on the output signal output from the light receiving unit 242 of the cartridge information reading device 24 (step S322). For example, in a case where the voltage of the output signal output from the light receiving unit 242 is equal to or higher than the lighting lower limit voltage which is a lower limit voltage output from the light receiving unit 242 when the second light projecting unit 241b is lit, the MCU 63 determines that the second light projecting unit 241b is lit, and in a case where the voltage of the output signal output from the light receiving unit 242 is lower than the lighting lower limit voltage, the MCU 63 determines that the second light projecting unit 241b is turned off, and generates a light projecting pattern of the second light projecting unit 241b based on the light received by the light receiving unit 242. Then, the MCU 63 determines whether the light projecting pattern of the second light projecting unit 241b generated based on the light received by the light receiving unit 242 matches the predetermined light projecting pattern projected from the second light projecting unit 241b. Then, in a case where the light projecting pattern of the second light projecting unit 241b generated based on the

light received by the light receiving unit 242 matches the predetermined light projecting pattern projected from the second light projecting unit 241b, the MCU 63 determines that the light received by the light receiving unit 242 is the light of the predetermined light projecting pattern projected from the second light projecting unit 241b (YES in step S322). On the other hand, in a case where the light projecting pattern of the second light projecting unit 241b generated based on the light received by the light receiving unit 242 does not match the predetermined light projecting pattern projected from the second light projecting unit 241b, the MCU 63 determines that the light received by the light receiving unit 242 is not the light of the predetermined light projecting pattern projected from the second light projecting unit 241b (NO in step S322).

[0321] In a case where it is determined that the light received by the light receiving unit 242 is not the light of the predetermined light projecting pattern projected from the second light projecting unit 241b (NO in step S322), the MCU 63 increments the second light projecting unit error count Nerr2 by 1 to Nerr2+1 (step S323).

[0322] Subsequently, the MCU 63 determines whether the second light projecting unit error count Nerr2 is equal to or less than a predetermined count (step S324). In a case where the second projecting unit error count Nerr2 is equal to or less than the predetermined count (YES in step S324), the MCU 63 returns to step S321, and controls the cartridge information reading device 24 to project light in a predetermined light projecting pattern from the second light projecting unit 241b toward the second display area 492 of the information display unit 49 again. In this case, the light projecting pattern of the light projected from the second light projecting unit 241b may be the same light projecting pattern or may be a different light projecting pattern according to a numerical value of the second light projecting unit error count Nerr2.

[0323] In a case where the second light projecting unit error count Nerr2 is not equal to or less than the predetermined count, that is, is greater than the predetermined count (NO in step S324), the MCU 63 determines that the cartridge information acquisition process cannot be executed, proceeds to step S352, and sets the identification result of the flavor type of the aerosol source 71 to the regular type. Then, the process proceeds to step S353 to reset the first light projecting unit error count Nerr1 and the second light projecting unit error count Nerr2, as well as the third light projecting unit error count Nerr3 to be described later to zero, then the process proceeds to step S105 to store the identification result of the flavor type of the aerosol source 71 in the cartridge identification process in the memory 63a, and the cartridge identification process is ended.

[0324] In a case where it is determined that the light received by the light receiving unit 242 is the light of the predetermined light projecting pattern projected from the second light projecting unit 241b (YES in step S322), the MCU 63 detects the coloring of the second display area 492 of the information display unit 49 based on the light received by the light receiving unit 242 of the cartridge information reading device 24 (step S325).

[0325] In step S325, in a case where the voltage of the output signal output from the light receiving unit 242 when the second light projecting unit 241b is lit is equal to or higher than the predetermined voltage, the MCU 63 determines that the second display area 492 paired therewith is white or colorless and transparent, and in a case where the voltage of the output signal output from the light receiving unit 242 when the second light projecting unit 241b is lit is lower than the predetermined voltage, the MCU 63 determines that the second display area 492 paired therewith is black. Then, the process proceeds to step S331.

[0326] In step S331, the MCU 63 controls the cartridge information reading device 24 to project light in a predetermined light projecting pattern from the third light projecting unit 241c toward the third display area 493 of the information display unit 49. For example, the cartridge information reading device 24 is controlled to project light from the third light projecting unit 241c toward the third display area 493 of the information display unit 49 in a light projecting pattern in which lighting for a predetermined time and turning off for a predetermined time are repeated a predetermined number of times. In this case, the light projecting pattern of the light projected from the third light projecting unit 241c may be the same as or different from the light projecting pattern of the light projected from the first light projecting unit 241a and the second light projecting unit 241b.

[0327] The light projected from the third light projecting unit 241c passes through the third light transmitting portion 263c of the light shielding member 25 and is irradiated to the third display area 493 of the information display unit 49, and the light receiving unit 242 receives the light reflected by the third display area 493 of the information display unit 49 and passing through the fourth light transmitting portion 263d of the light shielding member 25.

[0328] In the light receiving unit 242, an electromotive force is generated according to the illuminance of the received light by the photovoltaic effect, and the light receiving unit 242 outputs an output signal of a voltage corresponding to the illuminance of the received light to the MCU 63 by the electromotive force generated by the photovoltaic effect.

[0329] The MCU 63 determines whether the light received by the light receiving unit 242 is the light of the predetermined light projecting pattern projected from the third light projecting unit 241c based on the output signal output from the light receiving unit 242 of the cartridge information reading device 24 (step S332). For example, in a case where the voltage of the output signal output from the light receiving unit 242 is equal to or higher than the lighting lower limit voltage which is a lower limit voltage output from the light receiving unit 242 when the third light projecting unit 241c is lit, the MCU 63 determines that the third light projecting unit 241c is lit, and in a case where the voltage of the output signal output from the light receiving unit 242 is lower than the lighting lower limit voltage, the MCU 63 determines that the third light projecting unit 241c is turned off, and generates a light projecting pattern of the third light projecting unit 241c based on

the light received by the light receiving unit 242. Then, the MCU 63 determines whether the light projecting pattern of the third light projecting unit 241c generated based on the light received by the light receiving unit 242 matches the predetermined light projecting pattern projected from the third light projecting unit 241c. Then, in a case where the light projecting pattern of the third light projecting unit 241c generated based on the light received by the light receiving unit 242 matches the predetermined light projecting pattern projected from the third light projecting unit 241c, the MCU 63 determines that the light received by the light receiving unit 242 is the light of the predetermined light projecting pattern projected from the third light projecting unit 241c (YES in step S332). On the other hand, in a case where the light projecting pattern of the third light projecting unit 241c generated based on the light received by the light receiving unit 242 does not match the predetermined light projecting pattern projected from the third light projecting unit 241c, the MCU 63 determines that the light received by the light receiving unit 242 is not the light of the predetermined light projecting pattern projected from the third light projecting unit 241c (NO in step S332).

[0330] In a case where it is determined that the light received by the light receiving unit 242 is not the light of the predetermined light projecting pattern projected from the third light projecting unit 241c (NO in step S332), the MCU 63 increments the third light projecting unit error count Nerr3 by 1 to Nerr3+1 (step S333).

[0331] Subsequently, the MCU 63 determines whether the third light projecting unit error count Nerr3 is equal to or less than a predetermined count (step S334). In a case where the third light projecting unit error count Nerr3 is equal to or less than the predetermined count (YES in step S334), the MCU 63 returns to step S331, and controls the cartridge information reading device 24 to project light in a predetermined light projecting pattern from the third light projecting unit 241c toward the third display area 493 of the information display unit 49 again. In this case, the light projecting pattern of the light projected from the third light projecting unit 241c may be the same light projecting pattern or may be a different light projecting pattern according to a numerical value of the third light projecting unit error count Nerr3.

[0332] In a case where the third light projecting unit error count Nerr3 is not equal to or less than the predetermined count, that is, is greater than the predetermined count (NO in step S334), the MCU 63 determines that the cartridge information acquisition process cannot be executed, proceeds to step S352, and sets the identification result of the flavor type of the aerosol source 71 to the regular type. Then, the process proceeds to step S353 to reset the first light projecting unit error count Nerr1, the second light projecting unit error count Nerr2, and the third light projecting unit error count Nerr3 to zero, then the process proceeds to step S105 to store the identification result of the flavor type of the aerosol source 71 in the cartridge identification process in the memory 63a, and the cartridge identification process is ended.

[0333] In a case where it is determined that the light received by the light receiving unit 242 is the light of the predetermined light projecting pattern projected from the third light projecting unit 241c (YES in step S332), the MCU 63 detects the coloring of the third display area 493 of the information display unit 49 based on the light received by the light receiving unit 242 of the cartridge information reading device 24 (step S335).

[0334] In step S335, in a case where the voltage of the output signal output from the light receiving unit 242 when the third light projecting unit 241c is lit is equal to or higher than the predetermined voltage, the MCU 63 determines that the third display area 493 paired therewith is white or colorless and transparent, and in a case where the voltage of the output signal output from the light receiving unit 242 when the third light projecting unit 241c is lit is lower than the predetermined voltage, the MCU 63 determines that the third display area 493 paired therewith is black. Then, the process proceeds to step S341.

[0335] In step S341, the MCU 63 acquires the colored patterns of the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 based on the coloring of the first display area 491 of the information display unit 49 detected in step S315, the coloring of the second display area 492 of the information display unit 49 detected in step S325, and the coloring of the third display area 493 of the information display unit 49 detected in step S335, and proceeds to step S342.

[0336] In step S342, the MCU 63 acquires the information on the flavor type of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 based on the colored patterns of the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 acquired in step S341.

[0337] The memory 63a of the MCU 63 stores an information display unit colored pattern-aerosol source correspondence table in which the colored patterns of the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 are associated with the flavor type of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40.

[0338] Referring to the information display unit colored pattern-aerosol source correspondence table stored in the memory 63a, the MCU 63 acquires the information on the flavor type of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 based on the colored patterns of the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 acquired in step S341.

[0339] In the present embodiment, as described above, in the information display unit 49 of the regular type cartridge 40 in which the aerosol source 71 not containing the menthol 80 is stored in the storage chamber 42, the first display area 491 is white or colorless and transparent, the second display area 492 is black, and the third display area 493 is white or colorless and transparent. Regarding the colored patterns of the first display area 491, the second display area

492, and the third display area 493 in the information display unit 49 of the menthol type cartridge 40 in which the aerosol source 71 containing the menthol 80 is stored in the storage chamber 42, the first display area 491 is black, the second display area 492 is white or colorless and transparent, and the third display area 493 is black. In the information display unit colored pattern-aerosol source correspondence table stored in the memory 63a, a colored pattern in which the first display area 491 is white or colorless and transparent, the second display area 492 is black, and the third display area 493 is white or colorless and transparent is associated with a matter that the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 is of a regular type which does not contain the menthol 80, and a colored pattern in which the first display area 491 is black, the second display area 492 is white or colorless and transparent, and the third display area 493 is black is associated with a matter that the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 is of a menthol type which contains the menthol 80. Referring to the information display unit colored pattern-aerosol source correspondence table stored in the memory 63a, the MCU 63 identifies that the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 is of the regular type that does not contain the menthol 80 when the colored patterns of the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 acquired in step S341 are colored patterns in which the first display area 491 is white or colorless and transparent, the second display area 492 is black, and the third display area 493 is white or colorless and transparent. In addition, referring to the information display unit colored pattern-aerosol source correspondence table stored in the memory 63a, the MCU 63 identifies that the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 is of the menthol type that contains the menthol 80 when the colored patterns of the first display area 491, the second display area 492, and the third display area 493 in the information display unit 49 acquired in step S341 are colored patterns in which the first display area 491 is black, the second display area 492 is white or colorless and transparent, and the third display area 493 is black. In this way, the MCU 63 acquires the information on the flavor type of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 based on the signals output from the cartridge information reading device 24.

[0340] Next, the MCU 63 determines whether the information on the flavor type of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 has been acquired in step S342 executed immediately before (step S343).

[0341] When the information on the flavor type of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 can be acquired in step S342 executed immediately before (YES in step S343), the flavor type of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 is set as the acquired flavor type information (step S351). Then, the process proceeds to step S353 to reset the first light projecting unit error count Nerr1, the second light projecting unit error count Nerr2, and the third light projecting unit error count Nerr3 to zero, then the process proceeds to step S105 to store the identification result of the flavor type of the aerosol source 71 in the cartridge identification process in the memory 63a, and the cartridge identification process is ended.

[0342] When the information on the flavor type of the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 cannot be acquired in step S342 executed immediately before (NO in step S343), the process proceeds to step S352, and the identification result of the flavor type of the aerosol source 71 is set to the regular type. Then, the process proceeds to step S353 to reset the first light projecting unit error count Nerr1, the second light projecting unit error count Nerr2, and the third light projecting unit error count Nerr3 to zero, then the process proceeds to step S105 to store the identification result of the flavor type of the aerosol source 71 in the cartridge identification process in the memory 63a, and the cartridge identification process is ended.

[0343] As described above, in the cartridge information acquisition process, the MCU 63 causes the first light projecting unit 241a, the second light projecting unit 241b, and the third light projecting unit 241c to project light one by one toward the display area paired therewith. The information displayed on the display area (any of the first display area 491, the second display area 492, and the third display area 493) of the information display unit 49 paired with the light projecting unit is acquired based on any one light projecting unit among the first light projecting unit 241a, the second light projecting unit 241b, and the third light projecting unit 241c that projects light, and light received by the light receiving unit 242 when the light projecting unit projects the light. Therefore, the coloring of the first display area 491, the second display area 492, and the third display area 493 of the information display unit 49 can be detected with a simple configuration and control, and the cost and the size of the cartridge information reading device 24 can be reduced.

[0344] In addition, in a case where the light received by the light receiving unit 242 is not the light of the predetermined light projecting pattern projected from the first light projecting unit 241a, the MCU 63 returns to step S311, and controls the cartridge information reading device 24 to project light in the same or a different predetermined light projecting pattern from the first light projecting unit 241a toward the first display area 491 of the information display unit 49 again. Similarly, in a case where the light received by the light receiving unit 242 is not the light of the predetermined light projecting pattern projected from the second light projecting unit 241b, the MCU 63 returns to step S321, and controls the cartridge information reading device 24 to project light in the same or a different predetermined light projecting pattern from the second light projecting unit 241b toward the second display area 492 of the information display unit 49 again. In addition, similarly, in a case where the light received by the light receiving unit 242 is not the light of the predetermined light projecting pattern projected from the third light projecting unit 241c, the MCU 63 returns to step S331, and controls the

cartridge information reading device 24 to project light in the same or a different predetermined light projecting pattern from the third light projecting unit 241c toward the third display area 493 of the information display unit 49 again. In this way, in a case where the light received by the light receiving unit 242 is the light of the predetermined light projecting pattern projected from the first light projecting unit 241a, the second light projecting unit 241b, and the third light projecting unit 241c, the coloring of the first display area 491, the second display area 492, and the third display area 493 paired therewith is detected based on the light received by the light receiving unit 242. Therefore, when the information displayed on the information display unit 49 is to be acquired based on the light received by the light receiving unit 242 of the cartridge information reading device 24, it is possible to reduce an influence of the light other than the light projected from the first light projecting unit 241a, the second light projecting unit 241b, and the third light projecting unit 241c, and to acquire the information displayed on the information display unit 49 more accurately.

[0345] Although an embodiment of the present invention has 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 those skilled in the art that various modifications or corrections can be conceived within the scope described in the claims, and it is understood that the modifications or corrections naturally fall within the technical scope of the present invention. In addition, respective constituent elements in the above embodiment may be optionally combined without departing from the gist of the invention.

[0346] For example, in the present embodiment, the flavor type information on the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 can be acquired by the cartridge information acquisition process, but information on the cartridge 40 other than the flavor type information on the aerosol source 71 stored in the storage chamber 42 of the cartridge 40, such as a manufacturing date of the cartridge 40 and a manufacturing place of the cartridge 40, may be acquired by the cartridge information acquisition process. In addition, a plurality of pieces of information on the cartridge 40 including the flavor type information on the aerosol source 71 stored in the storage chamber 42 of the cartridge 40 may be acquired by the cartridge information acquisition process.

[0347] For example, the information display unit 49 may be colored in any color, not limited to white or black, and the light receiving unit 242 of the cartridge information reading device 24 may be a color sensor capable of identifying the color by which the information display unit 49 is colored.

[0348] For example, the first display area 491, the second display area 492, and the third display area 493 are formed adjacent to each other in the order of the first display area 491, the second display area 492, and the third display area 493 from a side close to the electrode portion 48 on the outer side surface 411a of the outer peripheral wall 411 of the cartridge case 41 in the longitudinal direction of the cartridge case 41, but the first display area 491, the second display area 492, and the third display area 493 may be formed side by side in the circumferential direction of the cartridge case 41. In addition, each of the first display area 491, the second display area 492, and the third display area 493 may be formed at any position in the circumferential direction, a radial direction, and the axial direction on the outer side surface 411a of the outer peripheral wall 411 of the cartridge case 41.

[0349] For example, the information display unit 49 is partitioned into three display areas of the first display area 491, the second display area 492, and the third display area 493, but the information display unit 49 may be partitioned into two display areas or partitioned into four or more display areas.

[0350] For example, the light shielding member 25 is provided between the cartridge information reading device 24 and the inner peripheral wall 22 of the cartridge cover 20, but the light shielding member 25 may be provided between the inner peripheral wall 22 of the cartridge cover 20 and the cartridge 40, or may be provided both between the cartridge information reading device 24 and the inner peripheral wall 22 of the cartridge cover 20 and between the inner peripheral wall 22 of the cartridge cover 20 and the cartridge 40.

[0351] For example, an overall shape of the aerosol suction device 1 is not limited to the shape in which the power supply unit 10, the cartridge 40, and the capsule 50 are arranged in a line as illustrated in Fig. 1. The aerosol suction device 1 may be implemented such that the cartridge 40 and the capsule 50 can be replaced with respect to the power supply unit 10, and any shape such as a substantially box shape can be adopted.

[0352] For example, in the present embodiment, the capsule holder 30 is provided with the second heater 34, but the second heater 34 may not be provided.

[0353] For example, the capsule 50 may be implemented to be replaceable with respect to the power supply unit 10, and may be attachable to and detachable from the power supply unit 10.

[0354] In the present description, at least the following matters are described. In parentheses, corresponding constituent components and the like in the above-mentioned embodiment are indicated as examples, but the present invention is not limited thereto.

[0355]

(1) An aerosol generating device (aerosol suction device 1) including:

an attachable and detachable cartridge (cartridge 40) that stores an aerosol source (aerosol source 71); and

a power supply unit (power supply unit 10) including a power supply (power supply 61) and a controller (MCU 63), in which:

the cartridge is formed with an information display unit (information display unit 49) partitioned into a plurality of display areas (first display area 491, second display area 492, and third display area 493);
the aerosol generating device further includes:

a cartridge information reading device (cartridge information reading device 24) capable of projecting light toward the cartridge and receiving light reflected by the cartridge;
a partition wall (inner peripheral wall 22) provided between the cartridge information reading device and the cartridge and allowing light to be transmitted; and
a light shielding member (light shielding member 25) provided between the cartridge information reading device and the cartridge, and formed with light transmitting portions (light transmitting portion 26) which allow light to be transmitted;

the cartridge information reading device is configured to receive light reflected by each of the display areas of the information display unit from the light transmitting portions; and
the controller is configured to execute a cartridge information acquisition process of acquiring information on the cartridge based on information on the light reflected by each of the display areas of the information display unit, which is received by the cartridge information reading device.

[0356] According to (1), the partition wall that allows light to be transmitted and the light shielding member formed with the light transmitting portion that allows light to be transmitted are provided between the cartridge information reading device and the cartridge, so that it is possible to prevent the user from sucking a component such as solder, an adhesive, or the like used for fixing the cartridge information reading device when the user performs a suction operation during use of the aerosol generating device. Further, the controller is configured to execute the cartridge information acquisition process of acquiring the information on the cartridge based on the information on the light reflected by each of the display areas of the information display unit received by the cartridge information reading device, so that the aerosol generating device can acquire the information on the mounted cartridge while preventing the user from sucking the component such as solder, an adhesive, or the like used for fixing the cartridge information reading device.

[0357] (2) The aerosol generating device according to (1), in which
the light shielding member is provided at least one of between the cartridge information reading device and the partition wall and between the partition wall and the cartridge.

[0358] According to (2), the light shielding member is provided at least one of between the cartridge information reading device and the partition wall and between the partition wall and the cartridge, so that the light projected from the cartridge information reading device passes through the light transmitting portion of the light shielding member and is irradiated to the information display unit of the cartridge, and the cartridge information reading device receives the light reflected by the information display unit and passing through the light transmitting portion of the light shielding member. As a result, it is possible to prevent light other than the light projected from the cartridge information reading device from being irradiated to the cartridge, and it is possible to prevent the cartridge information reading device from receiving light other than the light reflected by the cartridge, so that the cartridge information reading device can more accurately detect a display mode of the information display unit of the cartridge.

[0359] (3) The aerosol generating device according to (1) or (2), in which:

the cartridge information reading device is configured to be disposed to face the cartridge with the partition wall and the light shielding member interposed therebetween;
the cartridge information reading device is configured to project light such that the light passes through the light transmitting portion of the light shielding member and the partition wall to irradiate the information display units; and
the cartridge information reading device is configured to receive light reflected by the information display unit and passing through the partition wall and the light transmitting portions of the light shielding member.

[0360] According to (3), the light projected from the cartridge information reading device passes through the light transmitting portion of the light shielding member and is irradiated to the information display unit of the cartridge, so that it is possible to prevent light other than the light projected from the cartridge information reading device from being irradiated to the information display unit of the cartridge. Further, the cartridge information reading device receives the light reflected by the information display unit and passing through the light transmitting portion of the light shielding member, so that the cartridge information reading device can be prevented from receiving light other than the light reflected by the information display unit. Accordingly, the cartridge information reading device can more accurately detect

the display mode of each of the display areas of the information display unit of the cartridge.

[0361] (4) The aerosol generating device according to (1) or (2), in which:

the cartridge information reading device includes:

light projecting units (first light projecting unit 241a, second light projecting unit 241b, and third light projecting unit 241c) being the same number as the display areas, and provided to be paired with each of the display areas of the information display unit; and
light receiving units (first light receiving unit 242a, second light receiving unit 242b, and third light receiving unit 242c) being the same number as the display areas, and provided to be paired with each of the display areas of the information display unit;

each of the light projecting units is configured to project light to irradiate a display area paired therewith; and
each of the light receiving units is configured to receive light reflected by a display area paired therewith.

[0362] According to (4), the display mode of each display area can be detected by the separate light projecting unit and the light receiving unit for each display area, so that the display mode of each display area of the information display unit of the cartridge can be detected more accurately.

[0363] (5) The aerosol generating device according to (4), in which
each of the light projecting units and each of the light receiving units are provided at a position facing the display area paired therewith.

[0364] According to (5), each of the light projecting units and the light receiving units is provided at a position facing the display area paired therewith, so that it is possible to shorten the length of the optical path of the light projected from each of the light projecting units and irradiated to the display area paired therewith and the length of the optical path of the light reflected by the display area paired therewith and received by each of the light receiving units. Accordingly, it is possible to prevent light other than the light projected from the light projecting unit paired therewith from being irradiated to each of the display areas, and it is possible to prevent the light receiving unit from receiving light other than the light reflected by the display area paired therewith, so that the cartridge information reading device can more accurately detect the display mode of each display area of the information display unit of the cartridge.

[0365] (6) The aerosol generating device according to (5), in which:

the partition wall is provided between the cartridge and each of the light projecting units and the light receiving units;
the light shielding member is provided between the partition wall and each of the light projecting units and the light receiving units;
the light projecting units and the light receiving units are disposed to face the cartridge with the partition wall and the light shielding member interposed therebetween;
each of the light transmitting portions is formed between each of the display areas of the information display unit and each of the light projecting units and the light receiving units paired with each of the display areas;
the light projecting units are configured to project light such that the light reaches the display areas paired with the light projecting units passing through the partition wall and the light transmitting portions of the light shielding member formed between the light projecting units and the display areas paired therewith; and
the light receiving units are configured to receive light reflected by the display areas paired with the light receiving units and passing through the partition wall as well as the light transmitting portions of the light shielding member formed between the light receiving units and the display areas paired therewith.

[0366] According to (6), the light projecting unit is configured to project light such that the light reaches the display area paired with the light projecting unit passing through the light transmitting portion of the light shielding member formed between the light projecting unit and the display area paired therewith, so that it is possible to prevent the light projected from the light projecting unit from being irradiated to a display area other than the display area paired with the light projecting unit. Further, the light receiving unit is configured to receive the light reflected by the display area paired with the light receiving unit and passing through the light transmitting portion of the light shielding member formed between the light receiving unit and the display area paired with the light receiving unit, so that other light receiving units can be prevented from receiving light reflected by a portion other than the display areas paired with the light receiving units. Accordingly, the cartridge information reading device can more accurately detect the display mode of each of the display areas in the information display unit of the cartridge.

[0367] (7) The aerosol generating device according to (1) or (2), in which:

the cartridge information reading device includes:

at least one light projecting unit (light projecting unit 241); and
light receiving units (first light receiving unit 242a, second light receiving unit 242b, and third light receiving unit 242c) being the same number as the display areas, and provided to be paired with each of the display areas of the information display unit; and

the light receiving units are configured to receive light reflected by the display areas paired therewith.

[0368] According to (7), the cartridge information reading device can detect the display mode of each of the display areas of the information display unit by the light receiving unit provided to be paired with each of the display areas. Accordingly, the cartridge information reading device can detect the display mode of each of the display areas of the information display unit with at least one light projecting unit, so that it is possible to reduce the cost and the size of the light projecting unit.

[0369] (8) The aerosol generating device according to (7), in which
the light receiving units being the same number as the display areas are provided at positions facing the display areas respectively paired therewith.

[0370] According to (8), the light receiving units are provided at positions facing the display areas respectively paired therewith, so that it is possible to shorten the length of the optical path of the light reflected by each of the display areas and received by the light receiving unit paired therewith. Accordingly, it is possible to prevent each of the light receiving units of the cartridge information reading device from receiving light other than the light reflected by the display areas respectively paired therewith, so that the cartridge information reading device can more accurately detect the display mode of each of the display areas of the information display unit of the cartridge.

[0371] (9) The aerosol generating device according to (8), in which:

the partition wall is provided between the cartridge and each of the light projecting unit and the light receiving units;
the light shielding member is provided between the partition wall and each of the light projecting unit and the light receiving units;
the light projecting unit and the light receiving units are disposed to face the cartridge with the partition wall and the light shielding member interposed therebetween;
the light transmitting portions are formed at a position facing the light projecting unit, and between each of the display areas of the information display unit and each of the light receiving units paired with each of the display areas, respectively;
the light projecting unit is configured to project light such that the light reaches the information display units passing through the partition wall and a light transmitting portion of the light shielding member formed at the position facing the light projecting units; and
the light receiving units are configured to receive light reflected by the display areas paired with the light receiving units and passing through the partition wall as well as light transmitting portions of the light shielding member formed between the light receiving units and the display areas paired therewith.

[0372] According to (9), the light reflected by each display area passes through the light transmitting portion of the light shielding member formed between the display area and the light receiving unit paired therewith, and is received by the light receiving unit paired with the display area, so that the light receiving unit can be prevented from receiving light reflected by a portion other than each display area paired with the light receiving unit. Accordingly, the cartridge information reading device can more accurately detect the display mode of each of the display areas of the information display unit of the cartridge.

[0373] (10) The aerosol generating device according to any of (7) to (9), in which:
in the cartridge information acquisition process, the controller is configured to:

cause light to be projected from the light projecting unit toward the information display unit in a predetermined light projecting pattern;
acquire, when light received by each of the light receiving units is the light of the predetermined light projecting pattern, information displayed on the information display unit based on the light received by each of the light receiving units; and
cause, when the light received by each of the light receiving units is not the light of the predetermined light projecting pattern, the light to be projected again from the light projecting unit toward the cartridge in the same or a different predetermined light projecting pattern.

[0374] According to (10), in a case where the light received by each of the light receiving units is not the light of the predetermined light projecting pattern projected from the light projecting unit, the controller controls the cartridge infor-

mation reading device to cause the light to be projected from the light projecting unit toward the cartridge in the same or a different predetermined light projecting pattern, and in a case where the light received by each of the light receiving units is the light of the predetermined light projecting pattern projected from the light projecting unit, the controller acquires the information displayed on the information display unit based on the light received by each of the light receiving units. Therefore, when the information displayed on the information display unit is to be acquired based on the light received by each of the light receiving units of the cartridge information reading device, it is possible to reduce an influence of light other than the light projected from the light projecting unit and to acquire the information displayed on the information display unit more accurately.

[0375] (11) The aerosol generating device according to (1) or (2), further including:

light projecting units (first light projecting unit 241a, second light projecting unit 241b, and third light projecting unit 241c) being the same number as the display areas, and provided to be paired with each of the display areas of the information display unit; and
at least one light receiving unit (light receiving unit 242), in which
the light projecting units are configured to project light toward the display areas paired therewith.

[0376] According to (11), the cartridge information reading device can detect the display mode of each display area of the information display unit by receiving, by the light receiving unit, the light projected from each of the light projecting units and reflected by the display area paired therewith. Accordingly, the cartridge information reading device can detect the display mode of each display area of the information display unit with at least one light receiving unit, so that it is possible to reduce the cost and the size of the light receiving unit.

[0377] (12) The aerosol generating device according to (11), in which
the light projecting units being the same number as the display areas are provided at positions facing the display areas of the information display unit respectively paired therewith.

[0378] According to (12), each of the light projecting units are provided at positions facing the display areas respectively paired therewith, so that it is possible to shorten the length of the optical path of the light projected from each of the light projecting units and irradiated to the display area paired therewith. Accordingly, an accuracy of the light irradiated to each display area is improved, and an accuracy of the light reflected by each display area is improved, so that the cartridge information reading device can more accurately detect the display mode of each display area of the information display unit of the cartridge based on the light received by the light receiving unit.

[0379] (13) The aerosol generating device according to (12), in which:

the partition wall is provided between the cartridge and each of the light projecting unit and the light receiving units;
the light shielding member is provided between the partition wall and each of the light receiving unit and the light projecting units;
the light projecting units and the light receiving unit are disposed to face the cartridge with the partition wall and the light shielding member interposed therebetween;
the light transmitting portions are formed at a position facing the light receiving unit, and between each of the display areas of the information display unit and the light projecting units paired with each of the display areas, respectively;
the light projecting units are configured to project light such that the light reaches the information display unit passing through the partition wall and light transmitting portions of the light shielding member formed between the light projecting units and the display area paired therewith; and
the light receiving unit is configured to receive light reflected by the information display unit and passing through the partition wall as well as a light transmitting portion of the light shielding member formed at a position facing the light receiving unit.

[0380] According to (13), the light projected from each of the light projecting units passes through the light transmitting portion formed between the light projecting unit and the display areas paired therewith and is irradiated to the display area paired with the light projecting unit, so that it is possible to prevent the light projected from each of the light projecting units from being irradiated to a display area other than the display area paired with the light projecting unit. Accordingly, the cartridge information reading device can more accurately detect the display mode of each display area of the information display unit.

[0381] (14) The aerosol generating device according to any of (11) to (13), in which
in the cartridge information acquisition process, the controller is configured to:

cause each of the light projecting units to project light one by one toward a display area paired with the light projecting units; and
detect a display mode of the display areas paired with the light projecting units based on one light projecting unit

which projects light and light received by the light receiving unit when the one light projecting unit projects the light.

[0382] According to (14), in the cartridge information acquisition process, the controller causes each of the light projecting units to project light one by one toward the display area paired with the light projecting unit. The display mode of the display area paired with the light projecting unit is detected based on one light projecting unit that projects light and light received by the light receiving unit when the light projecting unit projects the light. Therefore, the display mode of each display area of the information display unit can be detected with a simple configuration and control, and the cost and the size of the cartridge information reading device can be reduced.

[0383] (15) The aerosol generating device according to (14), in which in the cartridge information acquisition process, the controller is configured to:

cause each of the light projecting units to project light one by one toward the display area paired with the light projecting unit in a predetermined light projecting pattern;
detect, in a case where light received by the light receiving unit when the one light projecting unit projects light is the light of the predetermined light projecting pattern, a display mode of the display area paired with the one light projecting unit based on the light received by the light receiving unit, and then cause a different one light projecting unit to project light in the same or a different predetermined light projecting pattern; and
cause, in a case where the light received by the light receiving unit when the one light projecting unit projects the light is not the light of the predetermined light projecting pattern, light to be projected again from the light projecting unit toward the cartridge in the same or a different predetermined light projecting pattern.

[0384] According to (15), in a case where the light received by the light receiving unit when one light projecting unit projects the light is not the light of the predetermined light projecting pattern, the light is projected in the same or a different predetermined light projecting pattern from the light projecting unit toward the display area paired with the light projecting unit again, and in a case where the light received by the light receiving unit when one light projecting unit projects the light is the light of the predetermined light projecting pattern, the display mode of the display area paired with the light projecting unit that projects the light is detected based on the light received by the light receiving unit. Therefore, when the information displayed on the information display unit is to be acquired based on the light received by the light receiving unit of the cartridge information reading device, it is possible to reduce the influence of the light other than the light projected from each of the light projecting units and to acquire the information displayed on the information display unit more accurately.

[0385] The present application is based on the Japanese patent application (Japanese Patent Application No. 2021-063181) filed on April 1, 2021, and contents thereof are incorporated herein by reference.

REFERENCE SIGNS LIST

[0386]

1: aerosol suction device (aerosol generating device)
10: power supply unit
22: inner peripheral wall (partition wall)
24: cartridge information reading device
241: light projecting unit
241a: first light projecting unit (light projecting unit)
241b: second light projecting unit (light projecting unit)
241c: third light projecting unit (light projecting unit)
242: light receiving unit
242a: first light receiving unit (light receiving unit)
242b: second light receiving unit (light receiving unit)
242c: third light receiving unit (light receiving unit)
25: light shielding member
26: light transmitting portion
40: cartridge
49: information display unit
491: first display area (display area)
492: second display area (display area)
493: third display area (display area)
61: power supply

63: MCU (controller)
71: aerosol source

Claims

1. An aerosol generating device comprising:

an attachable and detachable cartridge configured to store an aerosol source; and
a power supply unit including a power supply and a controller, wherein:

the cartridge is formed with an information display unit partitioned into a plurality of display areas;
the aerosol generating device further comprises:

a cartridge information reading device capable of projecting light toward the cartridge and receiving light reflected by the cartridge;
a partition wall provided between the cartridge information reading device and the cartridge, and allowing light to be transmitted; and
a light shielding member provided between the cartridge information reading device and the cartridge, and formed with light transmitting portions which allow light to be transmitted;

the cartridge information reading device is configured to receive light reflected by each of the display areas of the information display unit from the light transmitting portions; and
the controller is configured to execute a cartridge information acquisition process of acquiring information on the cartridge based on information on the light reflected by each of the display areas of the information display unit, which is received by the cartridge information reading device.

2. The aerosol generating device according to claim 1, wherein
the light shielding member is provided at least one of between the cartridge information reading device and the partition wall and between the partition wall and the cartridge.

3. The aerosol generating device according to claim 1 or 2, wherein:

the cartridge information reading device is configured to be disposed to face the cartridge with the partition wall and the light shielding member interposed therebetween;
the cartridge information reading device is configured to project light such that the light passes through the light transmitting portions of the light shielding member and the partition wall to irradiate the information display unit; and
the cartridge information reading device is configured to receive light reflected by the information display unit and passing through the partition wall and the light transmitting portions of the light shielding member.

4. The aerosol generating device according to claim 1 or 2, wherein:

the cartridge information reading device includes:

light projecting units being the same number as the display areas, and provided to be paired with each of the display areas of the information display unit; and
light receiving units being the same number as the display areas, and provided to be paired with each of the display areas of the information display unit;

each of the light projecting units is configured to project light to irradiate a display area paired therewith; and
each of the light receiving units is configured to receive light reflected by a display area paired therewith.

5. The aerosol generating device according to claim 4, wherein
each of the light projecting units and each of the light receiving units are provided at a position facing the display area paired therewith.

6. The aerosol generating device according to claim 5, wherein:

the partition wall is provided between the cartridge and each of the light projecting units and the light receiving units;
the light shielding member is provided between the partition wall and each of the light projecting units and the light receiving units;
the light projecting units and the light receiving units are disposed to face the cartridge with the partition wall and the light shielding member interposed therebetween;
each of the light transmitting portions is formed between each of the display areas of the information display unit and each of the light projecting units and the light receiving units paired with each of the display areas;
the light projecting units are configured to project light such that the light reaches the display areas paired with the light projecting units passing through the partition wall and the light transmitting portions of the light shielding member formed between the light projecting units and the display areas paired therewith; and
the light receiving units are configured to receive light reflected by the display areas paired with the light receiving units and passing through the partition wall as well as the light transmitting portions of the light shielding member formed between the light receiving units and the display areas paired therewith.

7. The aerosol generating device according to claim 1 or 2, wherein:

the cartridge information reading device includes:

at least one light projecting unit; and
light receiving units being the same number as the display areas and provided to be paired with each of the display areas of the information display unit; and

the light receiving units are configured to receive light reflected by the display areas paired therewith.

8. The aerosol generating device according to claim 7, wherein
the light receiving units being the same number as the display areas are provided at positions facing the display areas respectively paired therewith.

9. The aerosol generating device according to claim 8, wherein:

the partition wall is provided between the cartridge and each of the light projecting unit and the light receiving units;
the light shielding member is provided between the partition wall and each of the light projecting unit and the light receiving units;
the light projecting unit and the light receiving units are disposed to face the cartridge with the partition wall and the light shielding member interposed therebetween;
the light transmitting portions are formed at a position facing the light projecting unit, and between each of the display areas of the information display unit and each of the light receiving units paired with each of the display areas, respectively;
the light projecting unit is configured to project light such that the light reaches the information display units passing through the partition wall and a light transmitting portion of the light shielding member formed at the position facing the light projecting units; and
the light receiving units are configured to receive light reflected by the display areas paired with the light receiving units and passing through the partition wall as well as light transmitting portions of the light shielding member formed between the light receiving units and the display areas paired therewith.

10. The aerosol generating device according to any of claims 7 to 9, wherein
in the cartridge information acquisition process, the controller is configured to:

cause light to be projected from the light projecting unit toward the information display unit in a predetermined light projecting pattern;
acquire, when light received by each of the light receiving units is the light of the predetermined light projecting pattern, information displayed on the information display unit based on the light received by each of the light receiving units; and
cause, when the light received by each of the light receiving units is not the light of the predetermined light projecting pattern, light to be projected again from the light projecting unit toward the cartridge in the same or a different predetermined light projecting pattern.

11. The aerosol generating device according to claim 1 or 2, further comprising:

light projecting units being the same number as the display areas, and provided to be paired with each of the display areas of the information display unit, and
at least one light receiving unit, wherein
the light projecting units are configured to project light toward the display area paired therewith.

12. The aerosol generating device according to claim 11, wherein
the light projecting units being the same number as the display areas are provided at positions facing the display areas of the information display unit respectively paired therewith.

13. The aerosol generating device according to claim 12, wherein:

the partition wall is provided between the cartridge and each of the light receiving unit and the light projecting units;
the light shielding member is provided between the partition wall and each of the light receiving unit and the light projecting units;
the light projecting units and the light receiving unit are disposed so as to face the cartridge with the partition wall and the light shielding member interposed therebetween;
the light transmitting portions are formed at a position facing the light receiving unit, and between each of the display areas of the information display unit and the light projecting units paired with each of the display areas, respectively;
the light projecting units are configured to project light such that the light reaches the information display unit passing through the partition wall and light transmitting portions of the light shielding member formed between the light projecting units and the display area paired therewith; and
the light receiving unit is configured to receive light reflected by the information display unit and passing through the partition wall as well as a light transmitting portion of the light shielding member formed at a position facing the light receiving unit.

14. The aerosol generating device according to any of claims 11 to 13, wherein
in the cartridge information acquisition process, the controller is configured to:

cause each of the light projecting units to project light one by one toward a display area paired with the light projecting units; and
detect a display mode of the display areas paired with the light projecting units based on one light projecting unit which projects light and light received by the light receiving unit when the one light projecting unit projects the light.

15. The aerosol generating device according to claim 14, wherein:
in the cartridge information acquisition process, the controller is configured to:

cause each of the light projecting units to project light one by one toward the display area paired with the light projecting units in a predetermined light projecting pattern;
detect, in a case where light received by the light receiving unit when the one light projecting unit projects light is the light of the predetermined light projecting pattern, a display mode of the display area paired with the one light projecting unit based on the light received by the light receiving unit, and then cause a different one light projecting unit to project light in the same or a different predetermined light projecting pattern; and
cause, in a case where the light received by the light receiving unit when the one light projecting unit projects the light is not the light of the predetermined light projecting pattern, light to be projected again from the light projecting unit toward the cartridge in the same or a different predetermined light projecting pattern.

FIG. 1

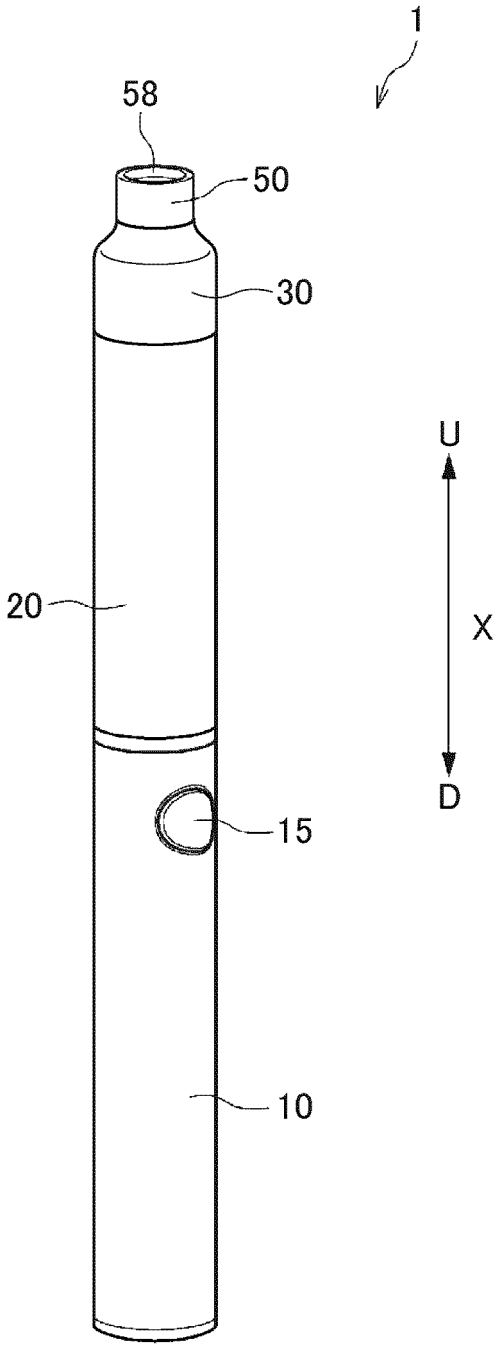

FIG. 2

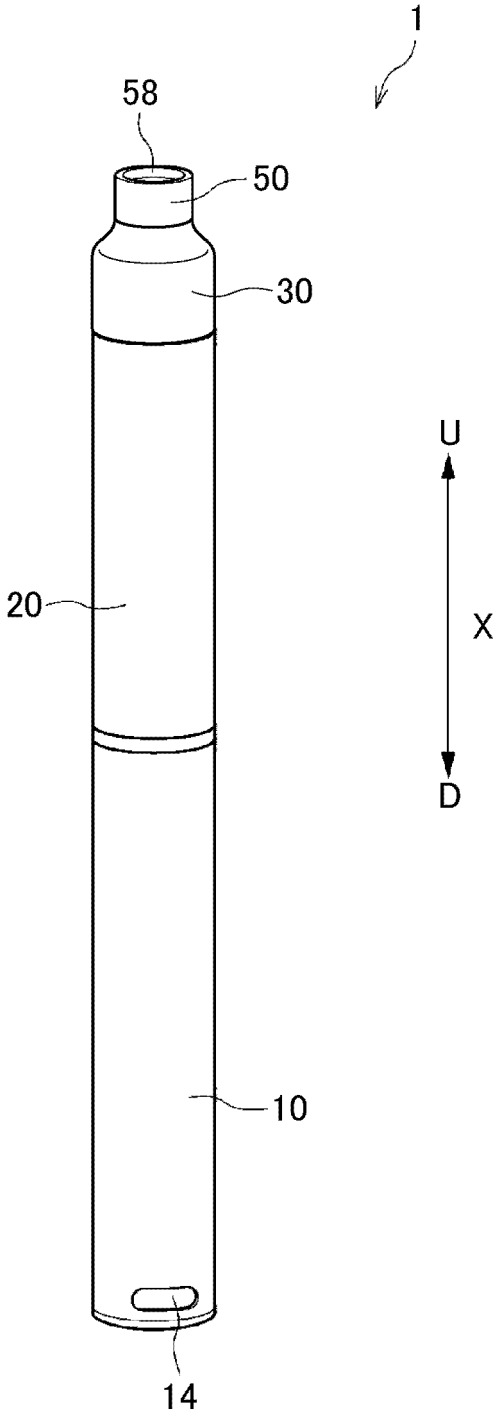

FIG. 3

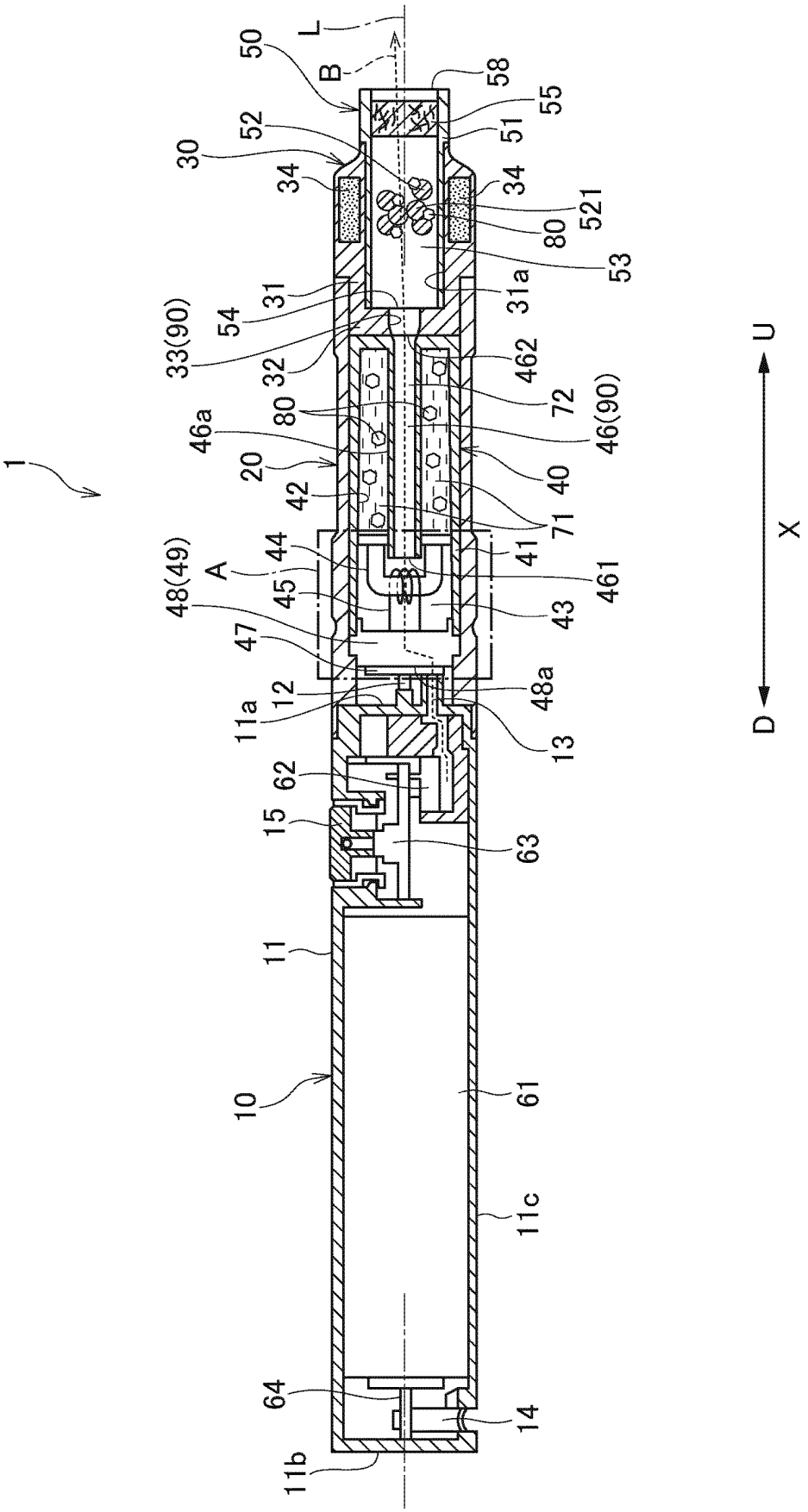
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FIG. 4

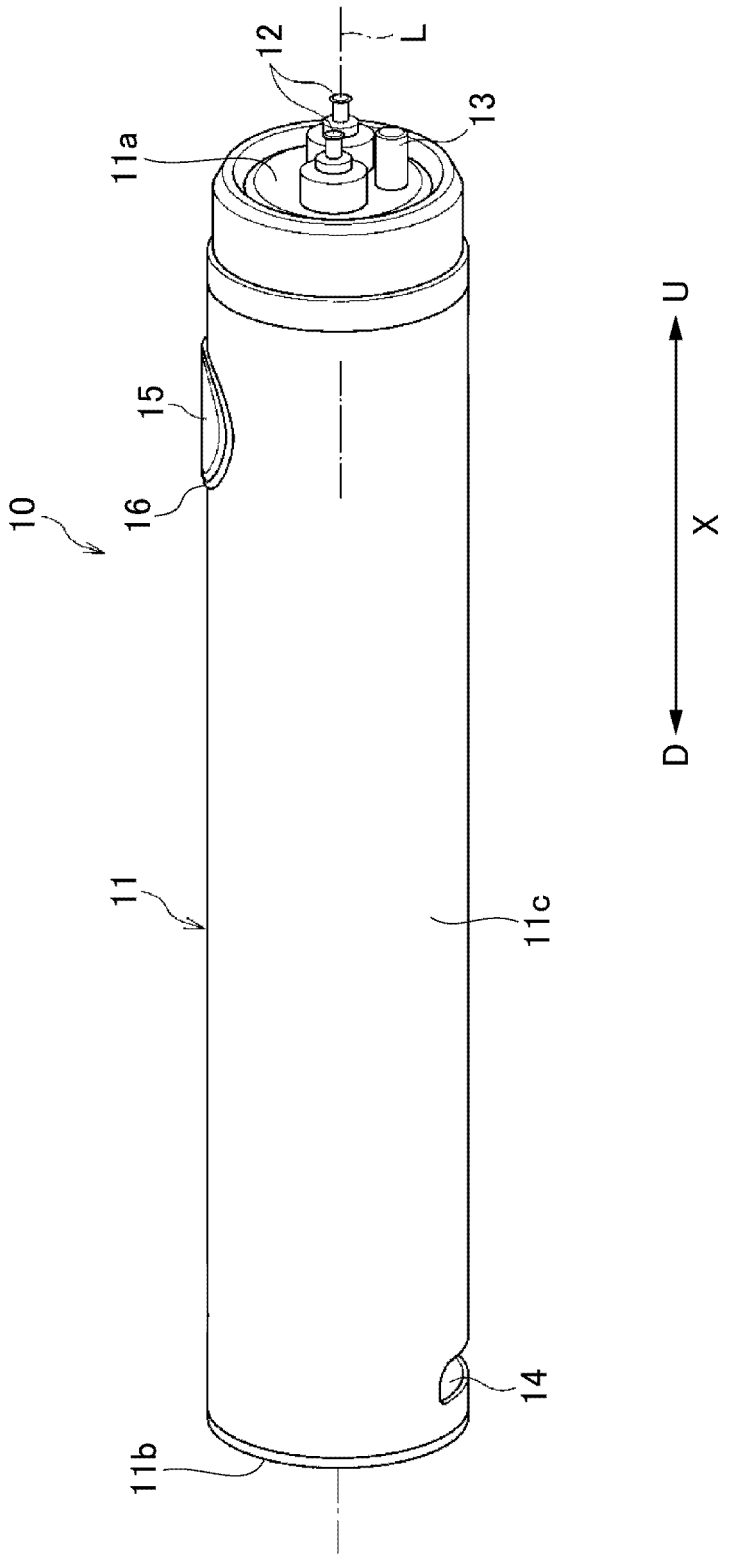
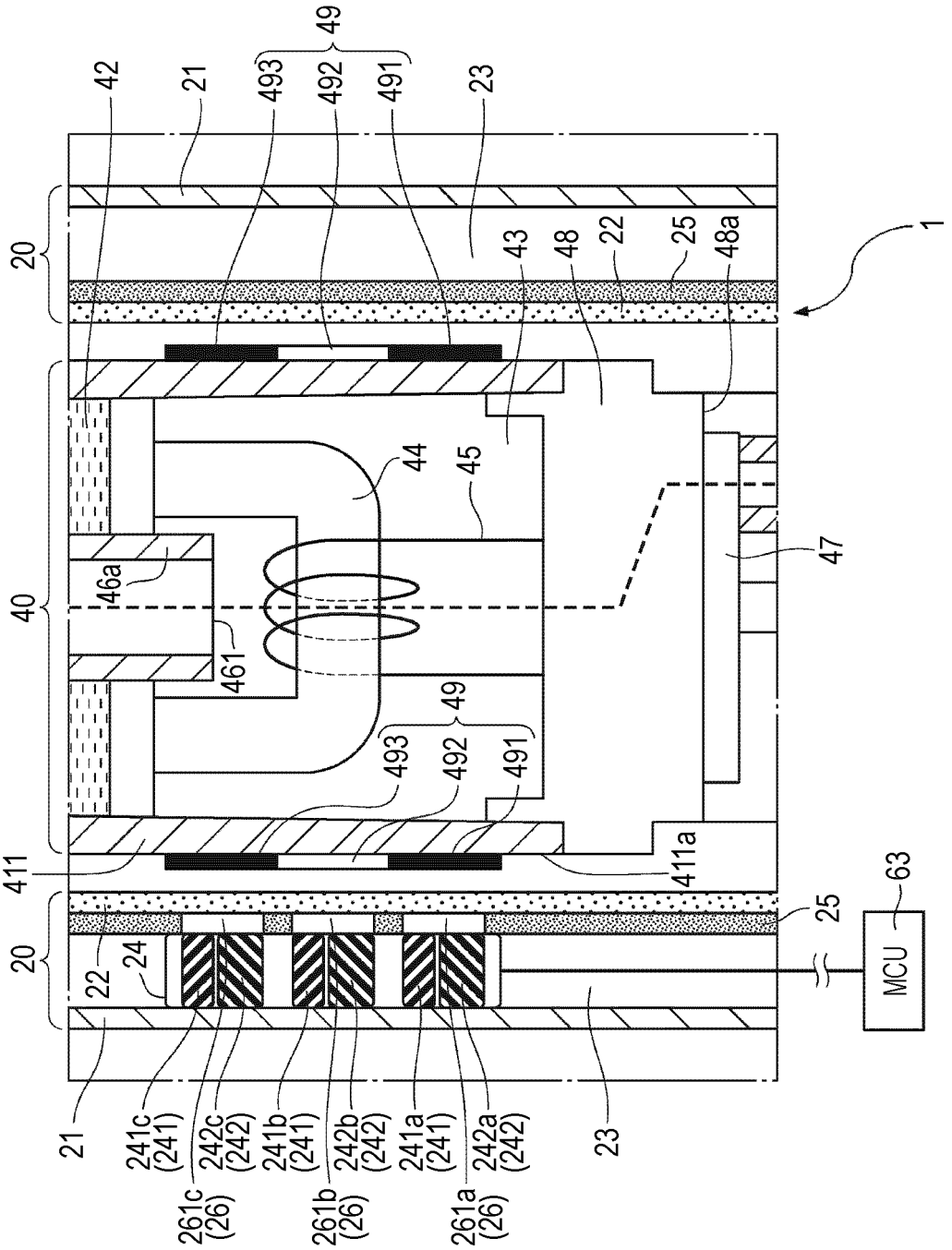


FIG. 5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492
491
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48
22
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48a
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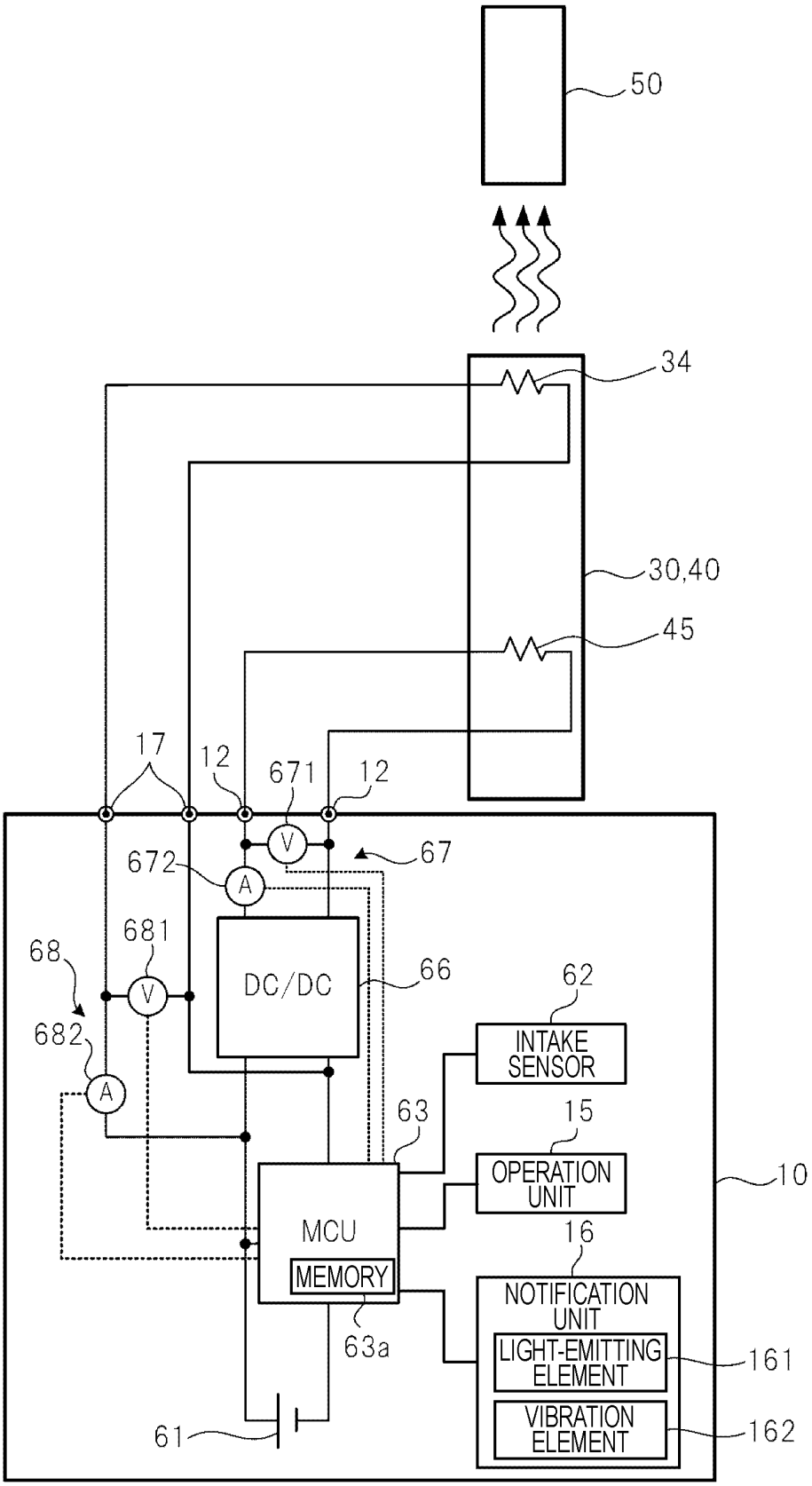
45
47
46a
461
411
411a
24
63
MCU
241c (241)
242c (242)
241b (241)
242b (242)
241a (241)
242a (242)
261c (26)
261b (26)
261a (26)

FIG. 6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A
63
15
OPERATION UNIT
10
MCU
MEMORY
16
NOTIFICATION UNIT
LIGHT-EMITTING ELEMENT
161
VIBRATION ELEMENT
162
63a
61

FIG. 7

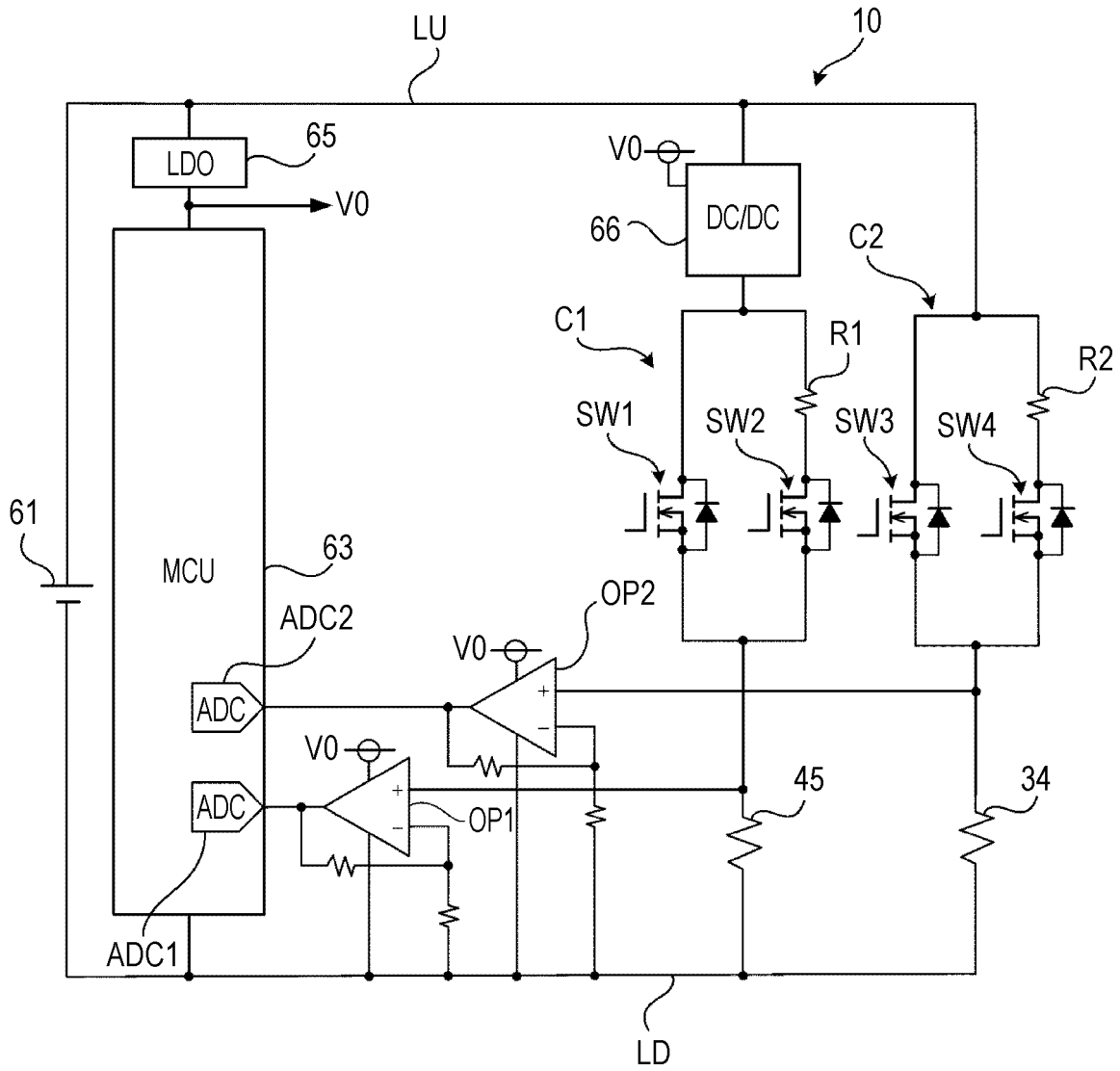

LU
10
LDO
65
V0
V0
66
DC/DC
C2
C1
R1
R2
SW1
SW2
SW3
SW4
61
MCU
63
ADC2
OP2
V0
ADC
V0
ADC
OP1
45
34
ADC1
LD

FIG. 8

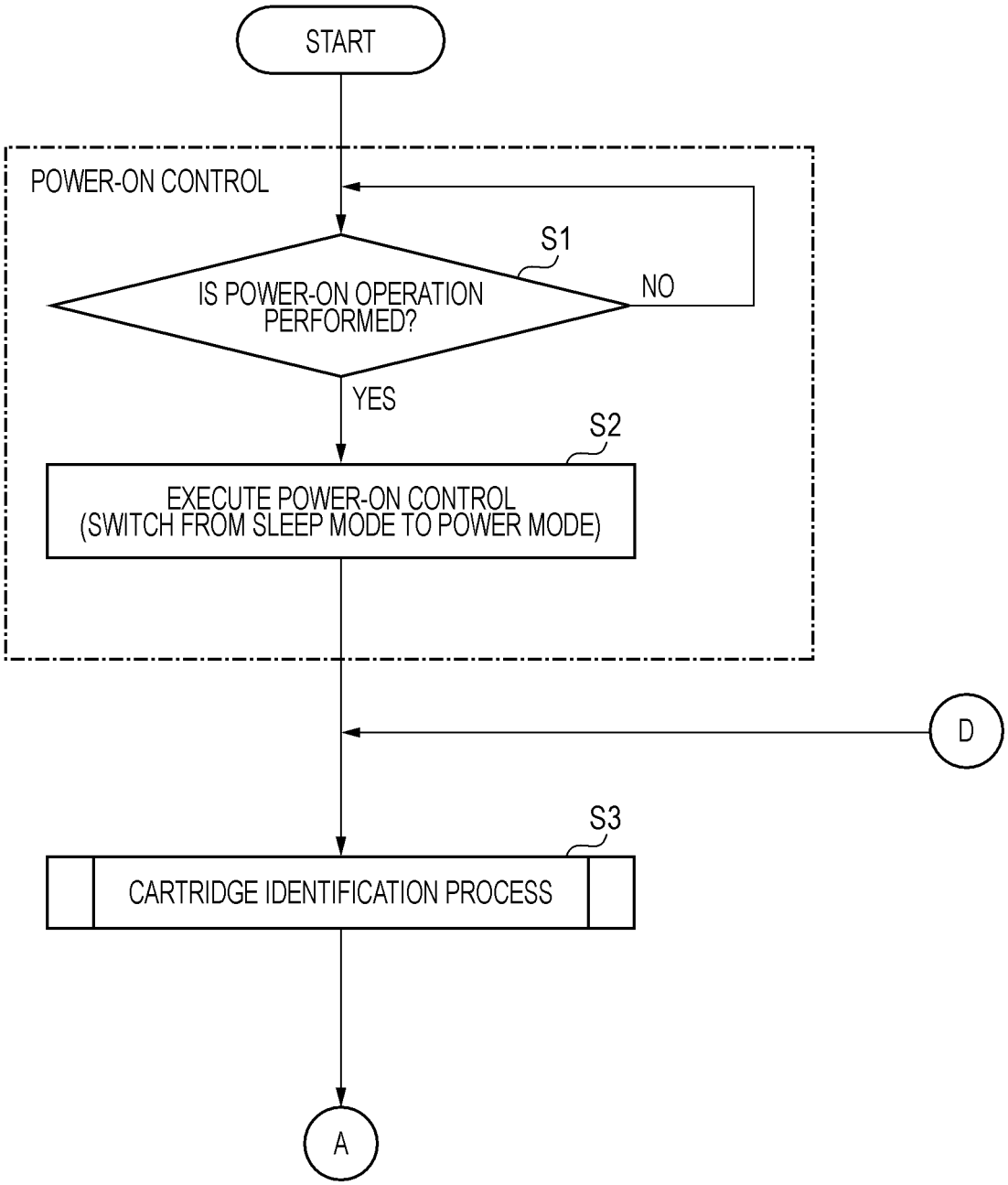
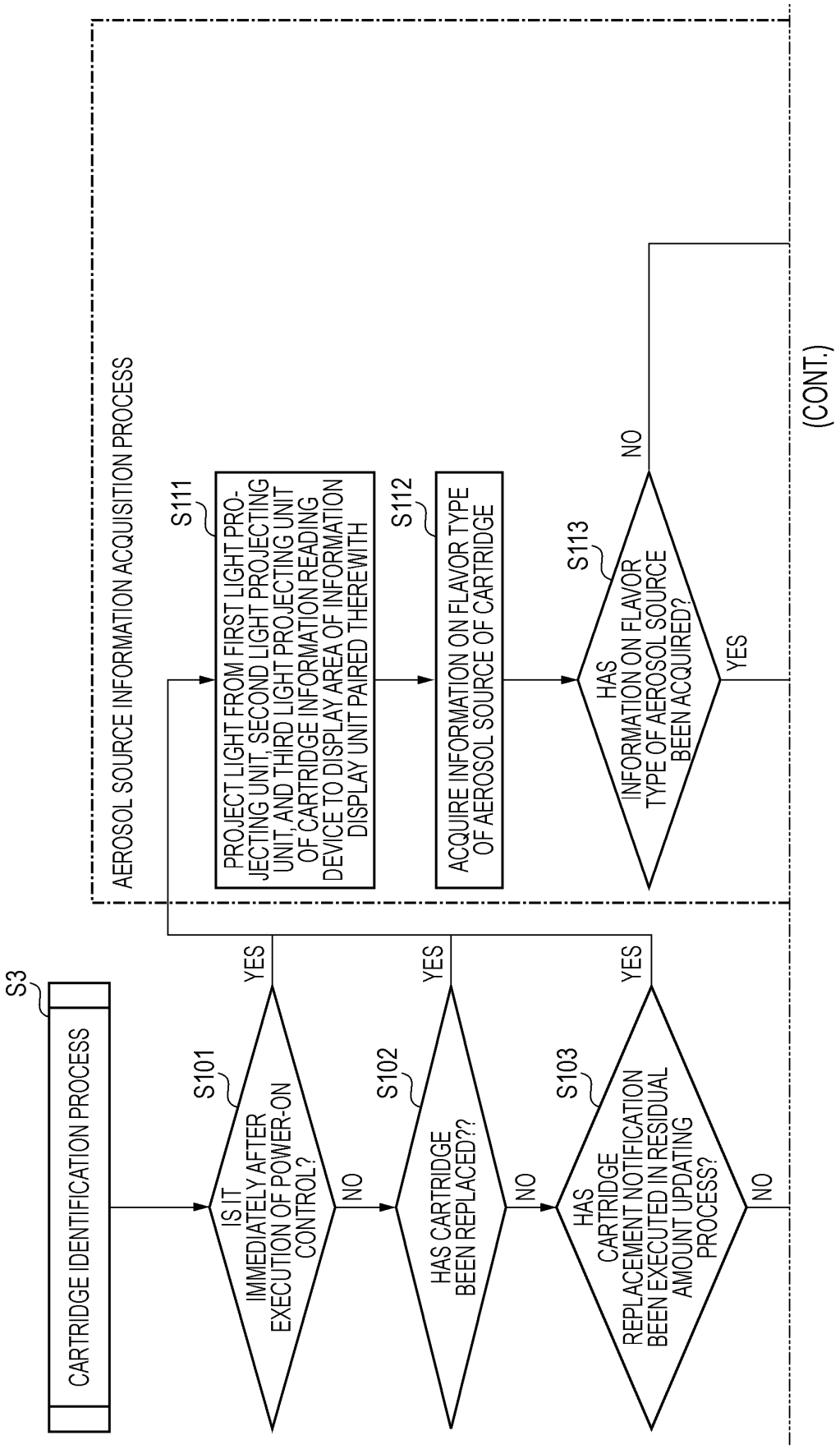

START
POWER-ON CONTROL
S1
IS POWER-ON OPERATION PERFORMED?
NO
YES
S2
EXECUTE POWER-ON CONTROL (SWITCH FROM SLEEP MODE TO POWER MODE)
D
S3
CARTRIDGE IDENTIFICATION PROCESS
A

FIG. 9


AEROSOL SOURCE INFORMATION ACQUISITION PROCESS
S3
CARTRIDGE IDENTIFICATION PROCESS
S101
IS IT IMMEDIATELY AFTER EXECUTION OF POWER-ON CONTROL?
YES
NO
S102
HAS CARTRIDGE BEEN REPLACED??
YES
NO
S103
HAS CARTRIDGE REPLACEMENT NOTIFICATION BEEN EXECUTED IN RESIDUAL AMOUNT UPDATING PROCESS?
YES
NO
S111
PROJECT LIGHT FROM FIRST LIGHT PROJECTING UNIT, SECOND LIGHT PROJECTING UNIT, AND THIRD LIGHT PROJECTING UNIT OF CARTRIDGE INFORMATION READING DEVICE TO DISPLAY AREA OF INFORMATION DISPLAY UNIT PAIRED THEREWITH
S112
ACQUIRE INFORMATION ON FLAVOR TYPE OF AEROSOL SOURCE OF CARTRIDGE
S113
HAS INFORMATION ON FLAVOR TYPE OF AEROSOL SOURCE BEEN ACQUIRED?
YES
NO
(CONT.)

(FIG. 9 Continued)

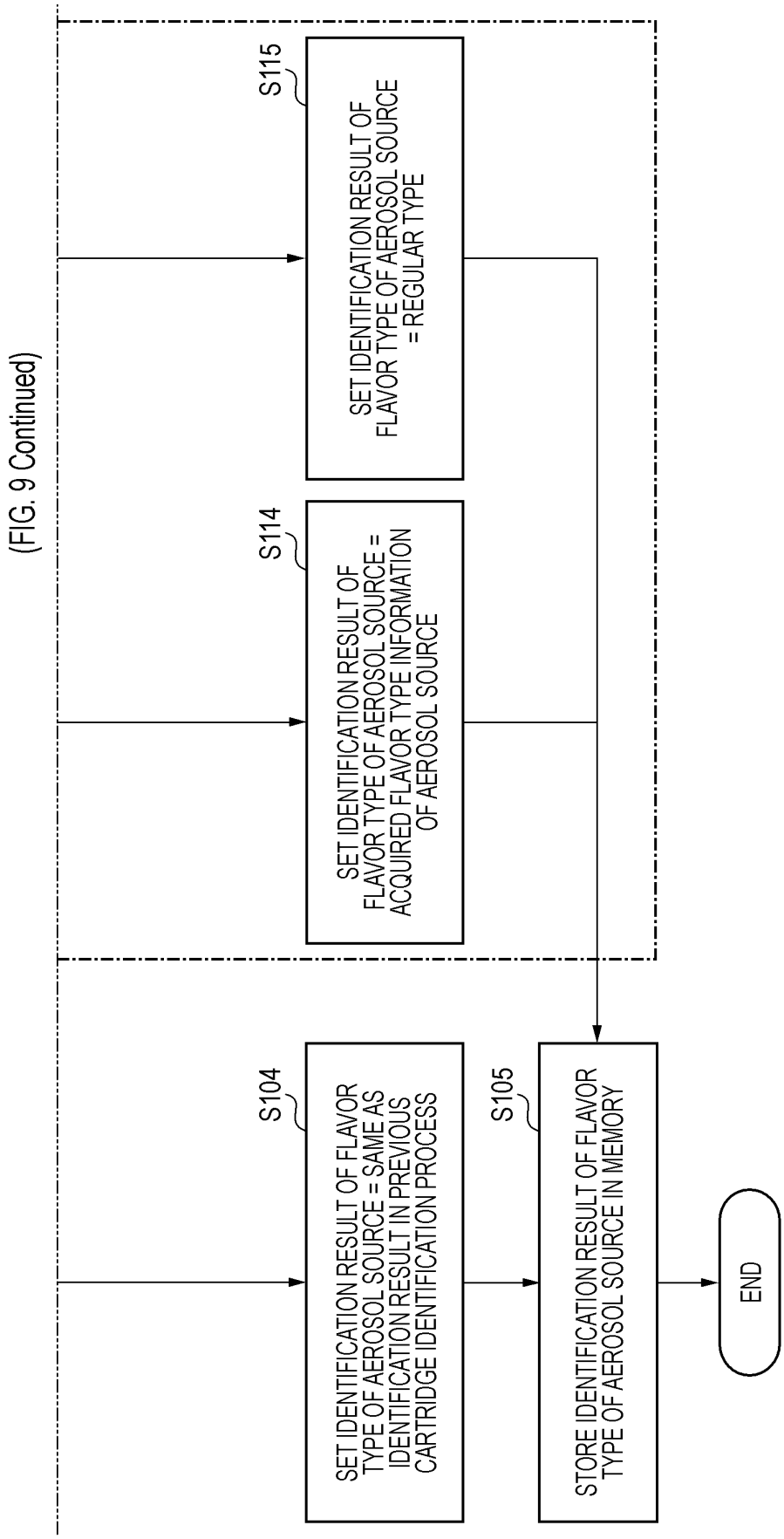


FIG. 10

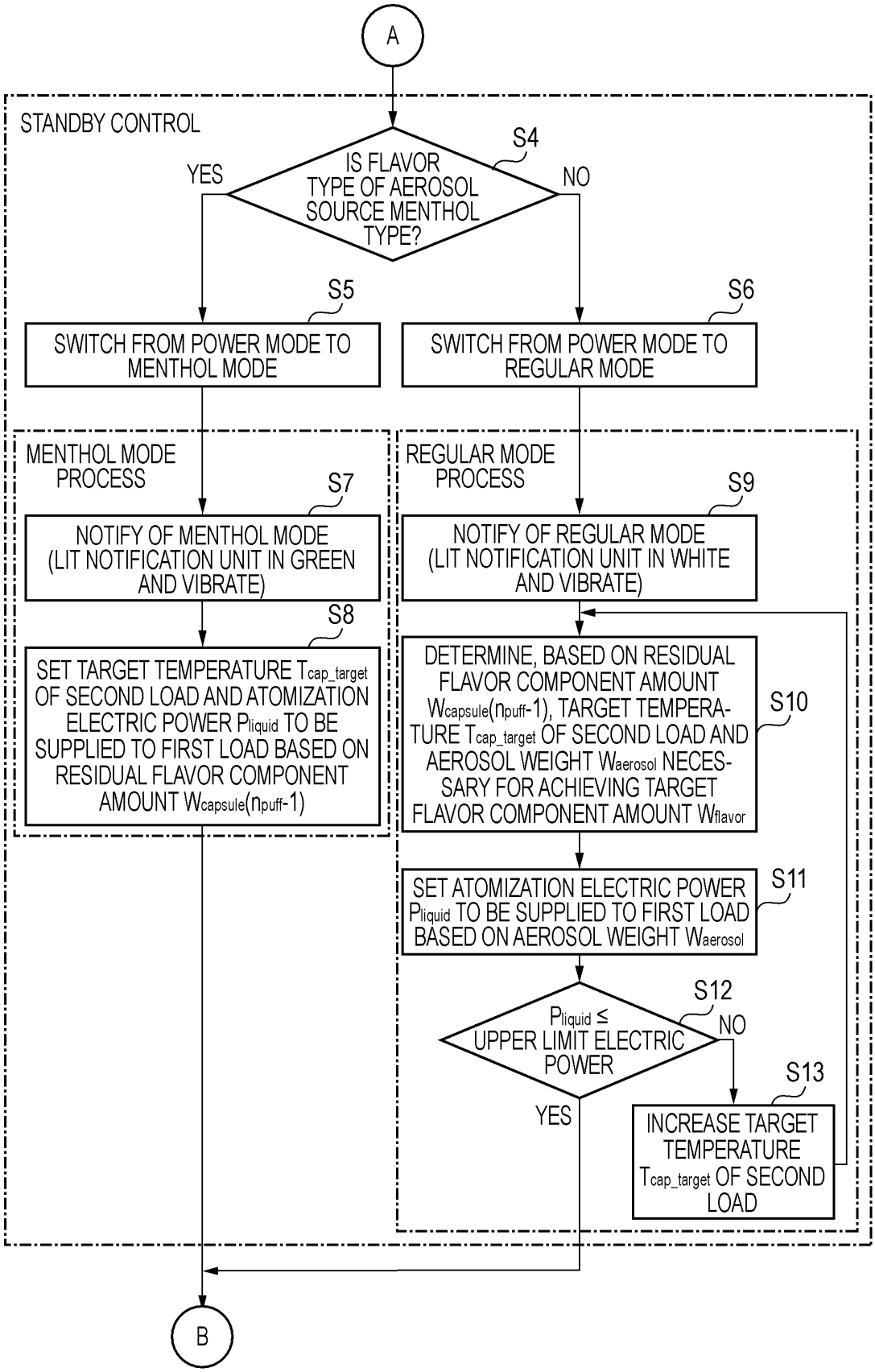
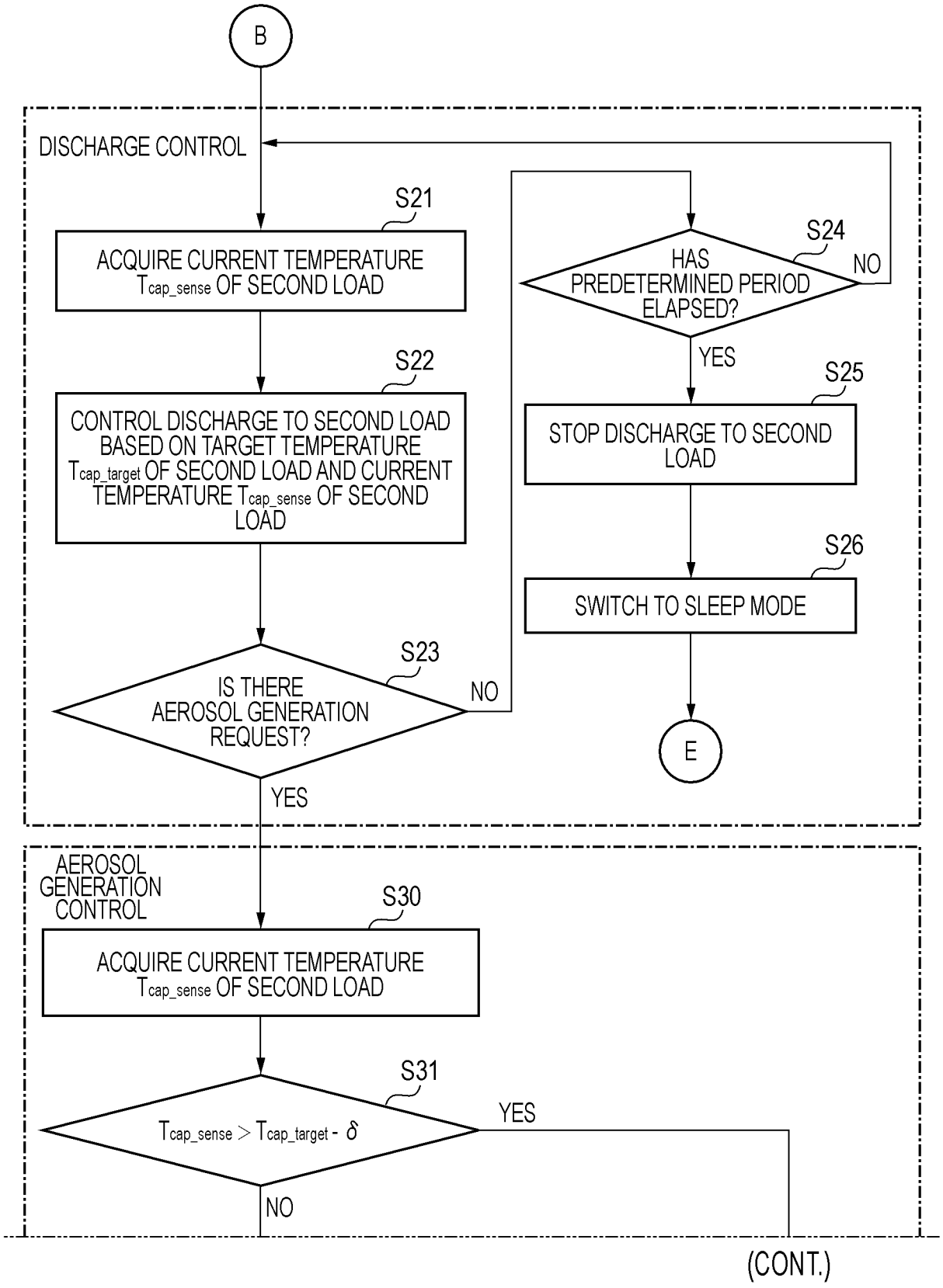

A
STANDBY CONTROL
S4
IS FLAVOR TYPE OF AEROSOL SOURCE MENTHOL TYPE?
YES
NO
S5
SWITCH FROM POWER MODE TO MENTHOL MODE
S6
SWITCH FROM POWER MODE TO REGULAR MODE
MENTHOL MODE PROCESS
S7
NOTIFY OF MENTHOL MODE (LIT NOTIFICATION UNIT IN GREEN AND VIBRATE)
S8
SET TARGET TEMPERATURE Tcap_target OF SECOND LOAD AND ATOMIZATION ELECTRIC POWER Pliquid TO BE SUPPLIED TO FIRST LOAD BASED ON RESIDUAL FLAVOR COMPONENT AMOUNT Wcapsule(npuff-1)
REGULAR MODE PROCESS
S9
NOTIFY OF REGULAR MODE (LIT NOTIFICATION UNIT IN WHITE AND VIBRATE)
DETERMINE, BASED ON RESIDUAL FLAVOR COMPONENT AMOUNT Wcapsule(npuff-1), TARGET TEMPERATURE Tcap_target OF SECOND LOAD AND AEROSOL WEIGHT Waerosol NECESSARY FOR ACHIEVING TARGET FLAVOR COMPONENT AMOUNT Wflavor
S10
SET ATOMIZATION ELECTRIC POWER Pliquid TO BE SUPPLIED TO FIRST LOAD BASED ON AEROSOL WEIGHT Waerosol
S11
S12
Pliquid ≤ UPPER LIMIT ELECTRIC POWER
NO
YES
S13
INCREASE TARGET TEMPERATURE Tcap_target OF SECOND LOAD
B

FIG. 11


B
DISCHARGE CONTROL
S21
ACQUIRE CURRENT TEMPERATURE Tcap_sense OF SECOND LOAD
S22
CONTROL DISCHARGE TO SECOND LOAD BASED ON TARGET TEMPERATURE Tcap_target OF SECOND LOAD AND CURRENT TEMPERATURE Tcap_sense OF SECOND LOAD
S23
IS THERE AEROSOL GENERATION REQUEST?
NO
YES
S24
HAS PREDETERMINED PERIOD ELAPSED?
NO
YES
S25
STOP DISCHARGE TO SECOND LOAD
S26
SWITCH TO SLEEP MODE
E
AEROSOL GENERATION CONTROL
S30
ACQUIRE CURRENT TEMPERATURE Tcap_sense OF SECOND LOAD
S31
Tcap_sense > Tcap_target - δ
YES
NO
(CONT.)

(FIG. 11 Continued)

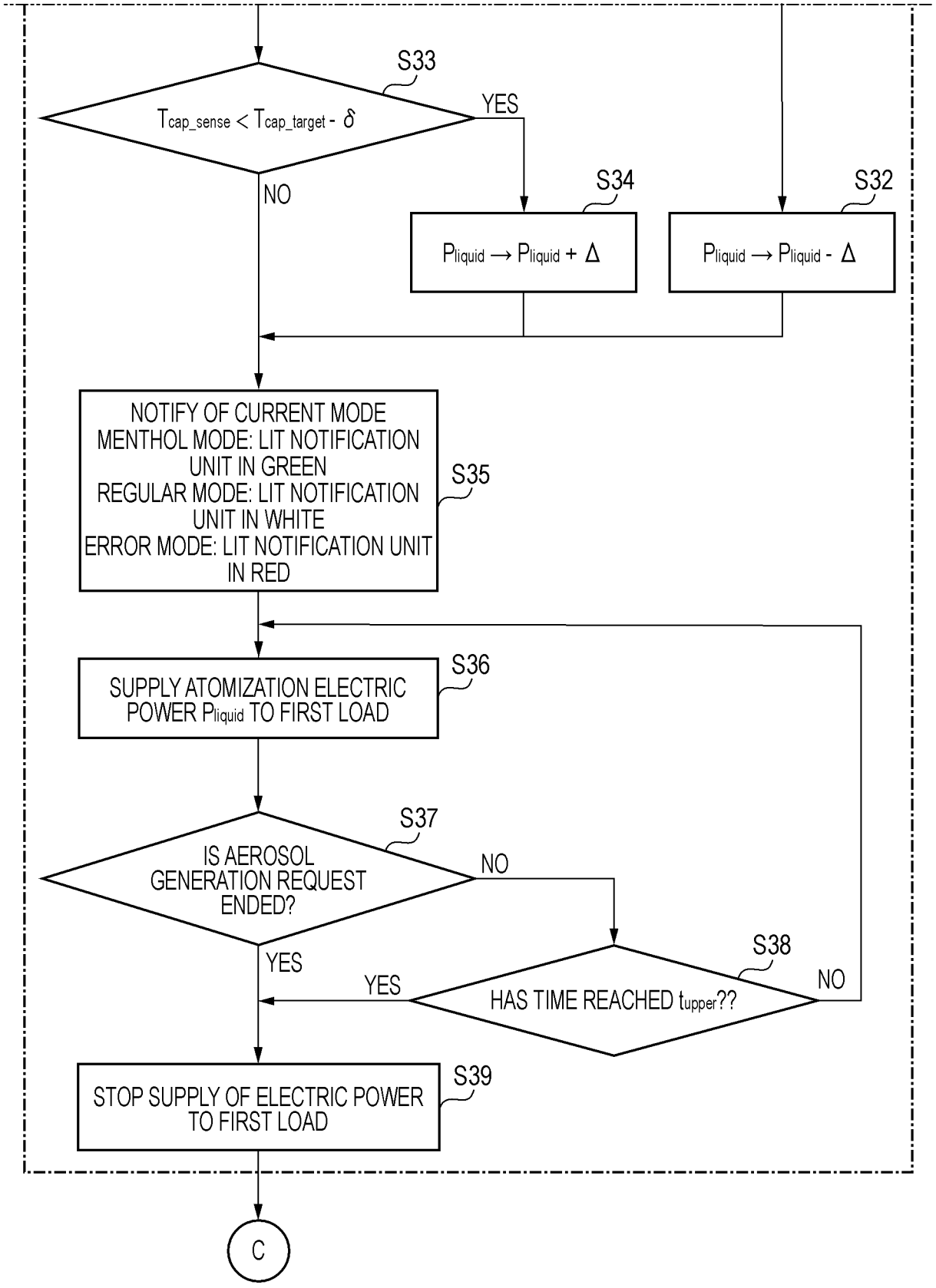


FIG. 12

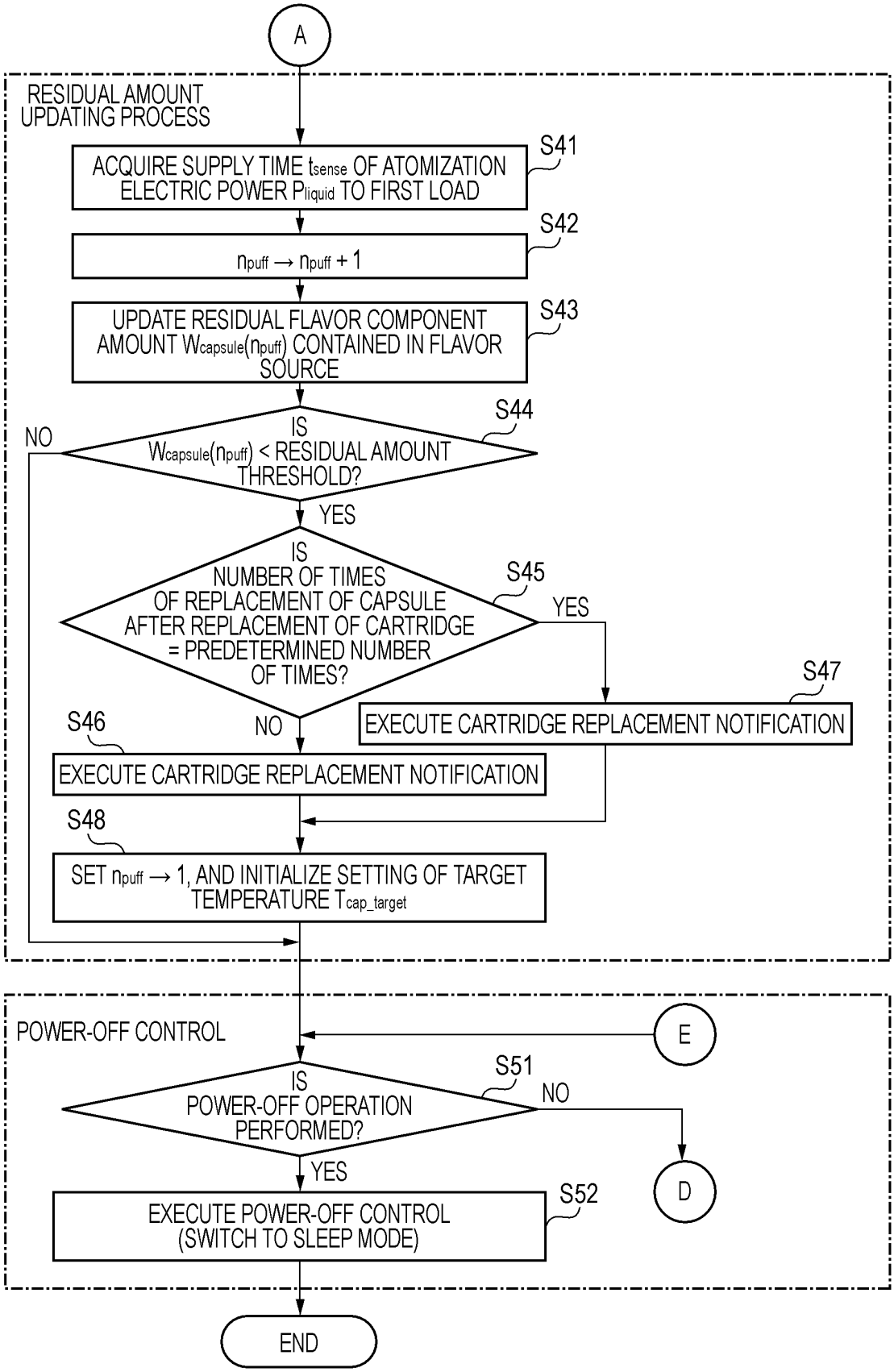

A
RESIDUAL AMOUNT UPDATING PROCESS
ACQUIRE SUPPLY TIME t_{sense} OF ATOMIZATION ELECTRIC POWER P_{liquid} TO FIRST LOAD
S41
$n_{puff} \rightarrow n_{puff} + 1$
S42
UPDATE RESIDUAL FLAVOR COMPONENT AMOUNT $W_{capsule}(n_{puff})$ CONTAINED IN FLAVOR SOURCE
S43
IS $W_{capsule}(n_{puff})$ < RESIDUAL AMOUNT THRESHOLD?
S44
NO
YES
IS NUMBER OF TIMES OF REPLACEMENT OF CAPSULE AFTER REPLACEMENT OF CARTRIDGE = PREDETERMINED NUMBER OF TIMES?
S45
YES
NO
S46
EXECUTE CARTRIDGE REPLACEMENT NOTIFICATION
S47
EXECUTE CARTRIDGE REPLACEMENT NOTIFICATION
S48
SET $n_{puff} \rightarrow 1$, AND INITIALIZE SETTING OF TARGET TEMPERATURE T_{cap_target}
POWER-OFF CONTROL
E
IS POWER-OFF OPERATION PERFORMED?
S51
NO
YES
D
EXECUTE POWER-OFF CONTROL (SWITCH TO SLEEP MODE)
S52
END

FIG. 13A

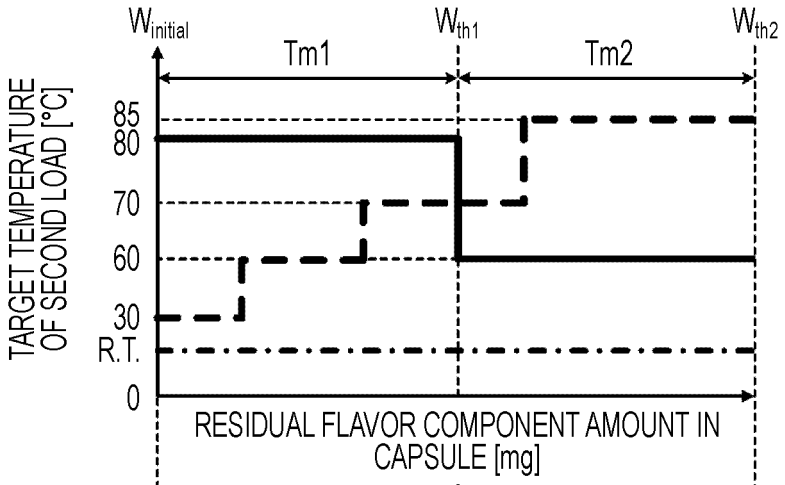


FIG. 13B

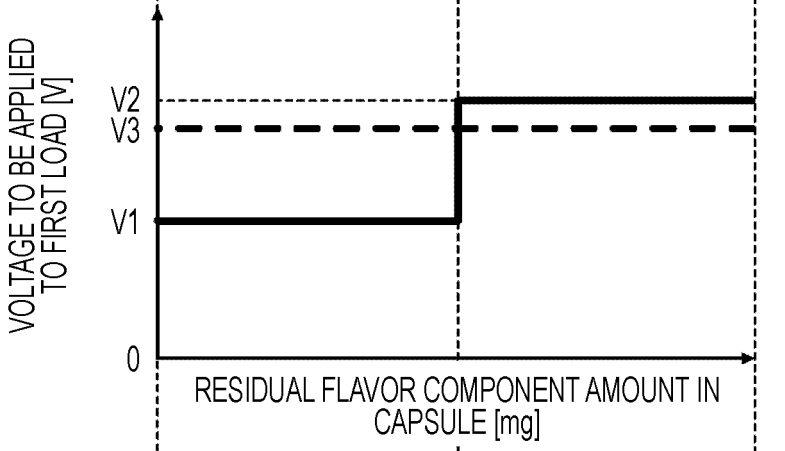


FIG. 13C

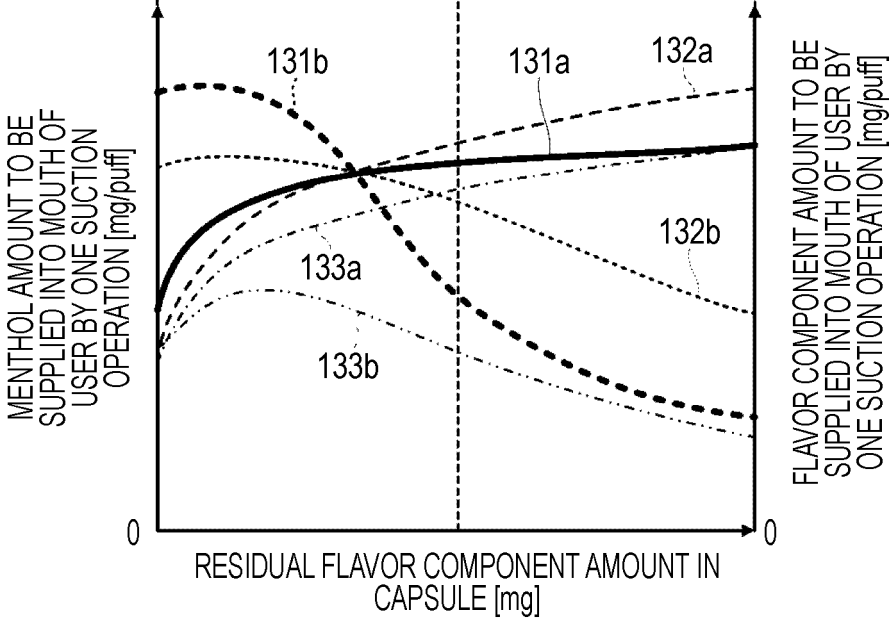


FIG. 14A

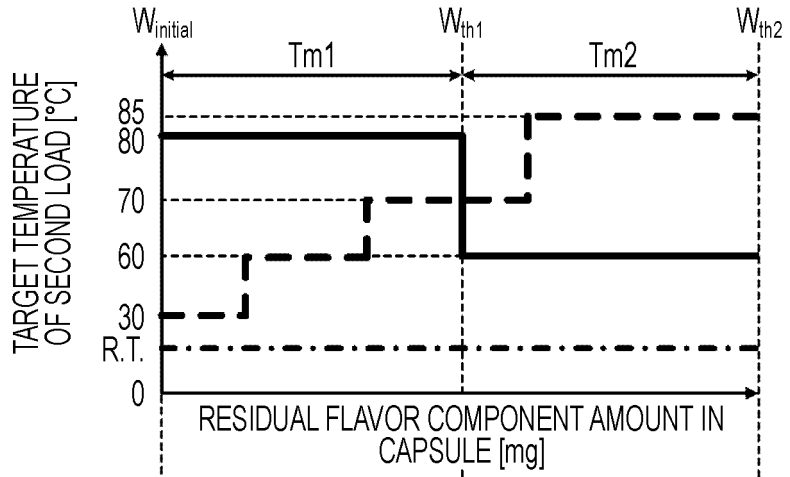


FIG. 14B

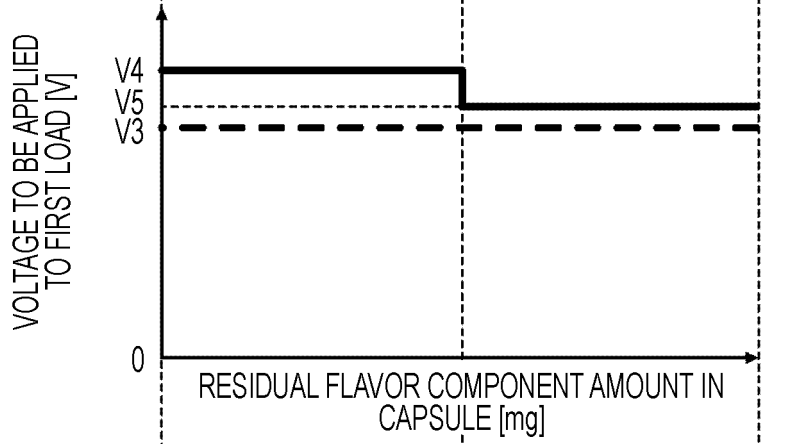


FIG. 14C

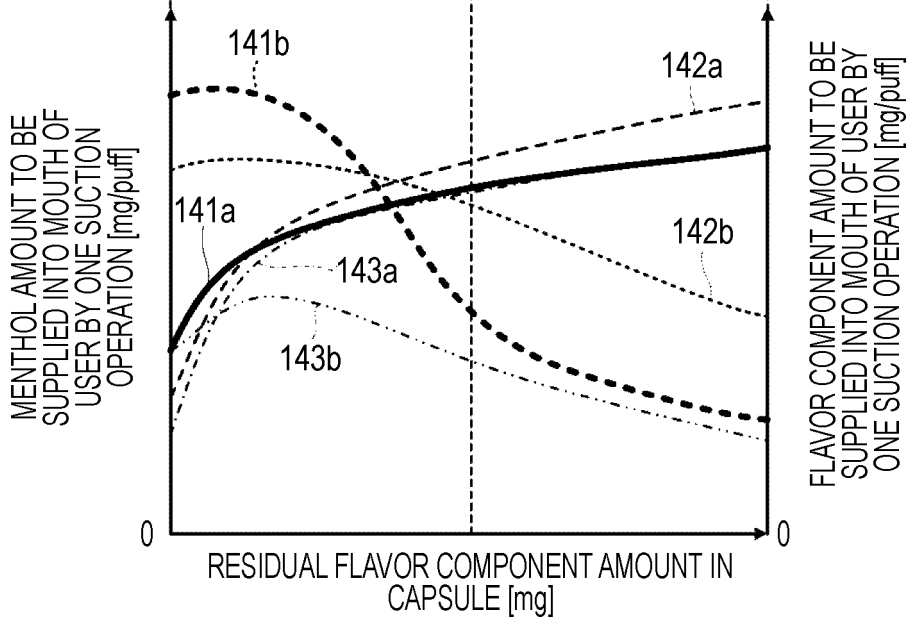
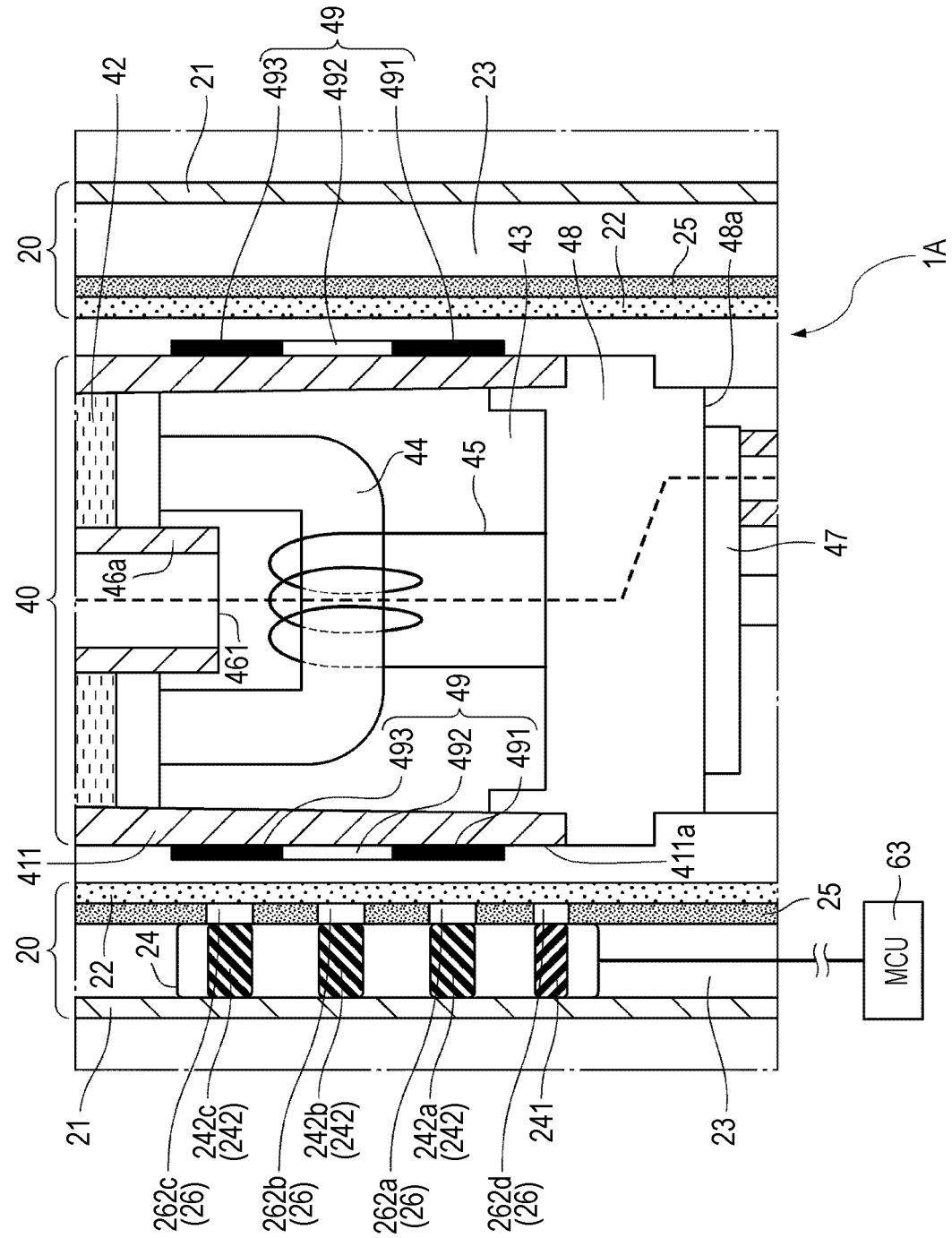


FIG. 15


1A
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40
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42
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49
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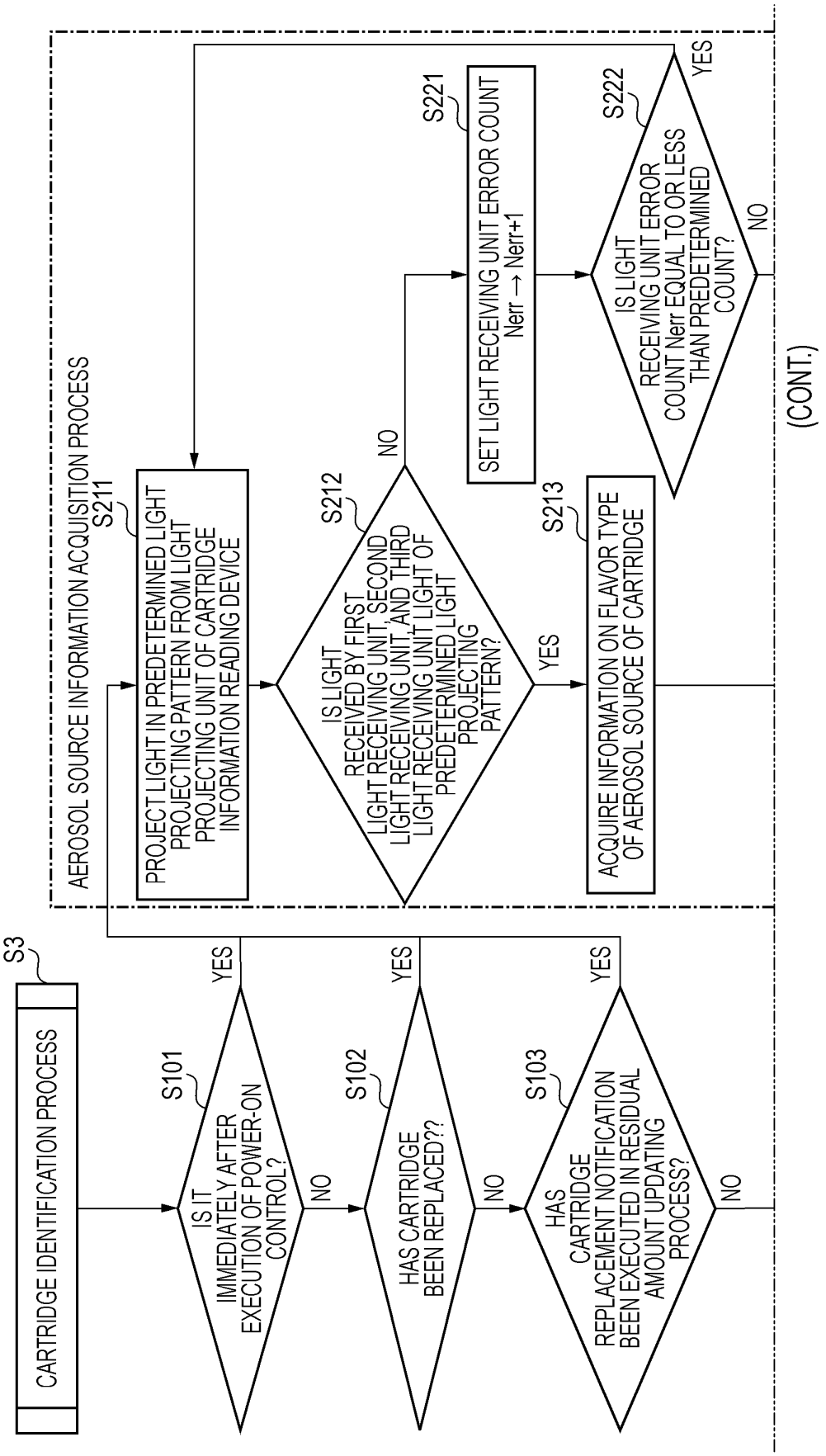
23
43
48
22
25
48a
44
45
47
46a
461
411
411a
63
MCU
24
21
242c (242)
242b (242)
242a (242)
241
23
262c (26)
262b (26)
262a (26)
262d (26)

FIG. 16


S3
CARTRIDGE IDENTIFICATION PROCESS
S101
IS IT IMMEDIATELY AFTER EXECUTION OF POWER-ON CONTROL?
YES
NO
S102
HAS CARTRIDGE BEEN REPLACED??
YES
NO
S103
HAS CARTRIDGE REPLACEMENT NOTIFICATION BEEN EXECUTED IN RESIDUAL AMOUNT UPDATING PROCESS?
YES
NO
AEROSOL SOURCE INFORMATION ACQUISITION PROCESS
S211
PROJECT LIGHT IN PREDETERMINED LIGHT PROJECTING PATTERN FROM LIGHT PROJECTING UNIT OF CARTRIDGE INFORMATION READING DEVICE
S212
IS LIGHT RECEIVED BY FIRST LIGHT RECEIVING UNIT, SECOND LIGHT RECEIVING UNIT, AND THIRD LIGHT RECEIVING UNIT LIGHT OF PREDETERMINED LIGHT PROJECTING PATTERN?
NO
YES
S213
ACQUIRE INFORMATION ON FLAVOR TYPE OF AEROSOL SOURCE OF CARTRIDGE
S221
SET LIGHT RECEIVING UNIT ERROR COUNT Nerr → Nerr+1
S222
IS LIGHT RECEIVING UNIT ERROR COUNT Nerr EQUAL TO OR LESS THAN PREDETERMINED COUNT?
YES
NO
(CONT.)

(FIG. 16 Continued)

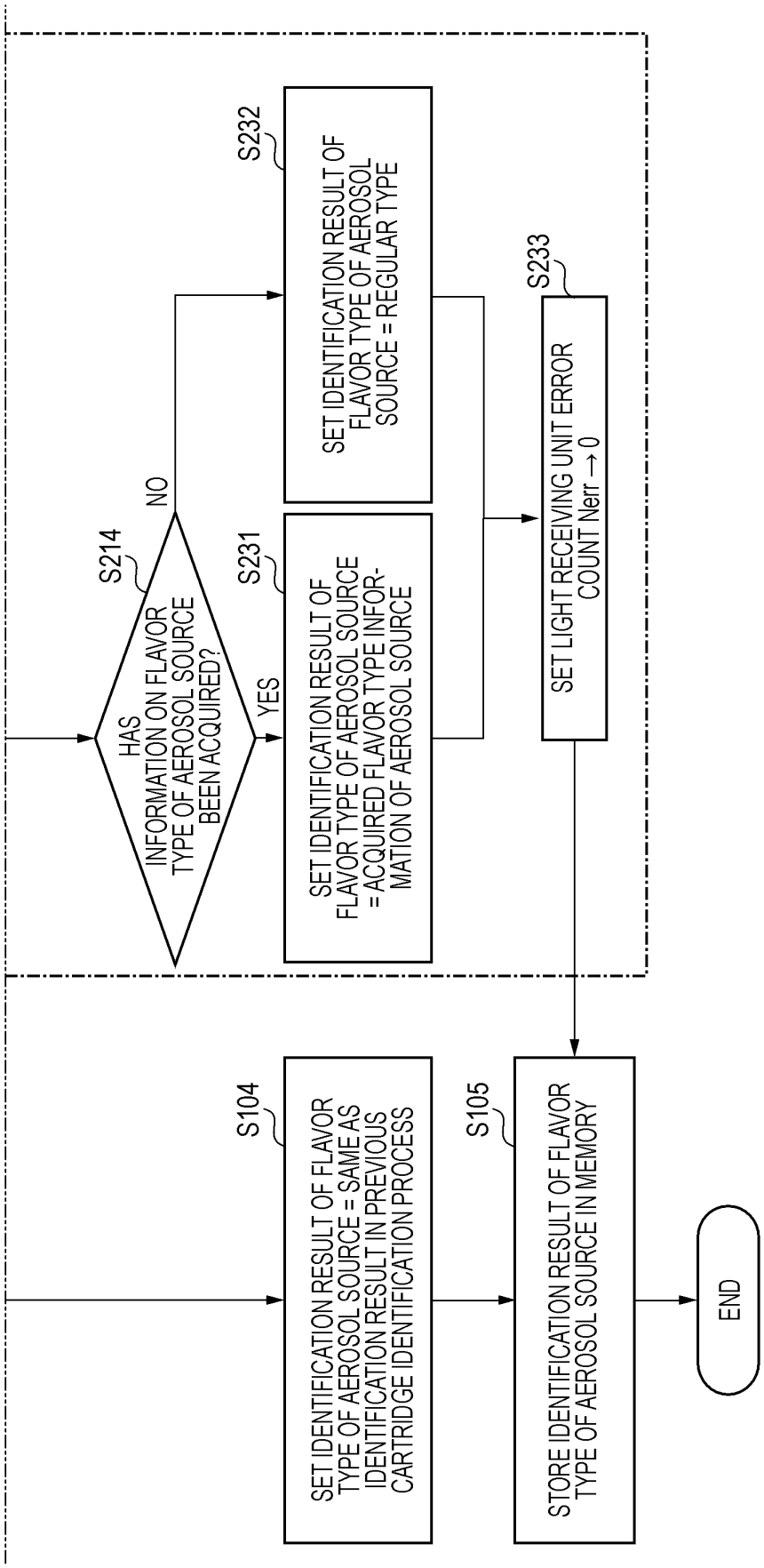
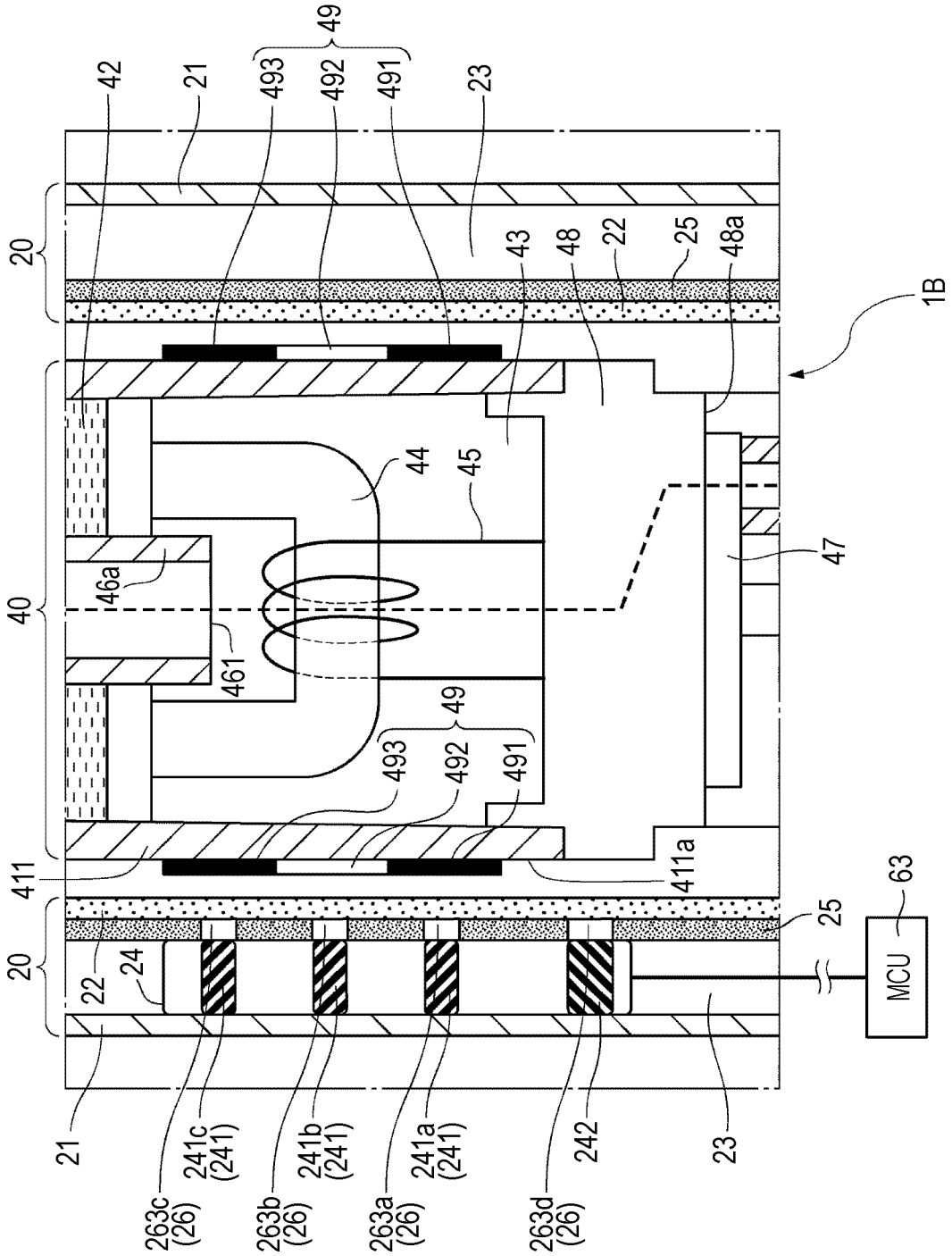


FIG. 17


42
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48a
1B
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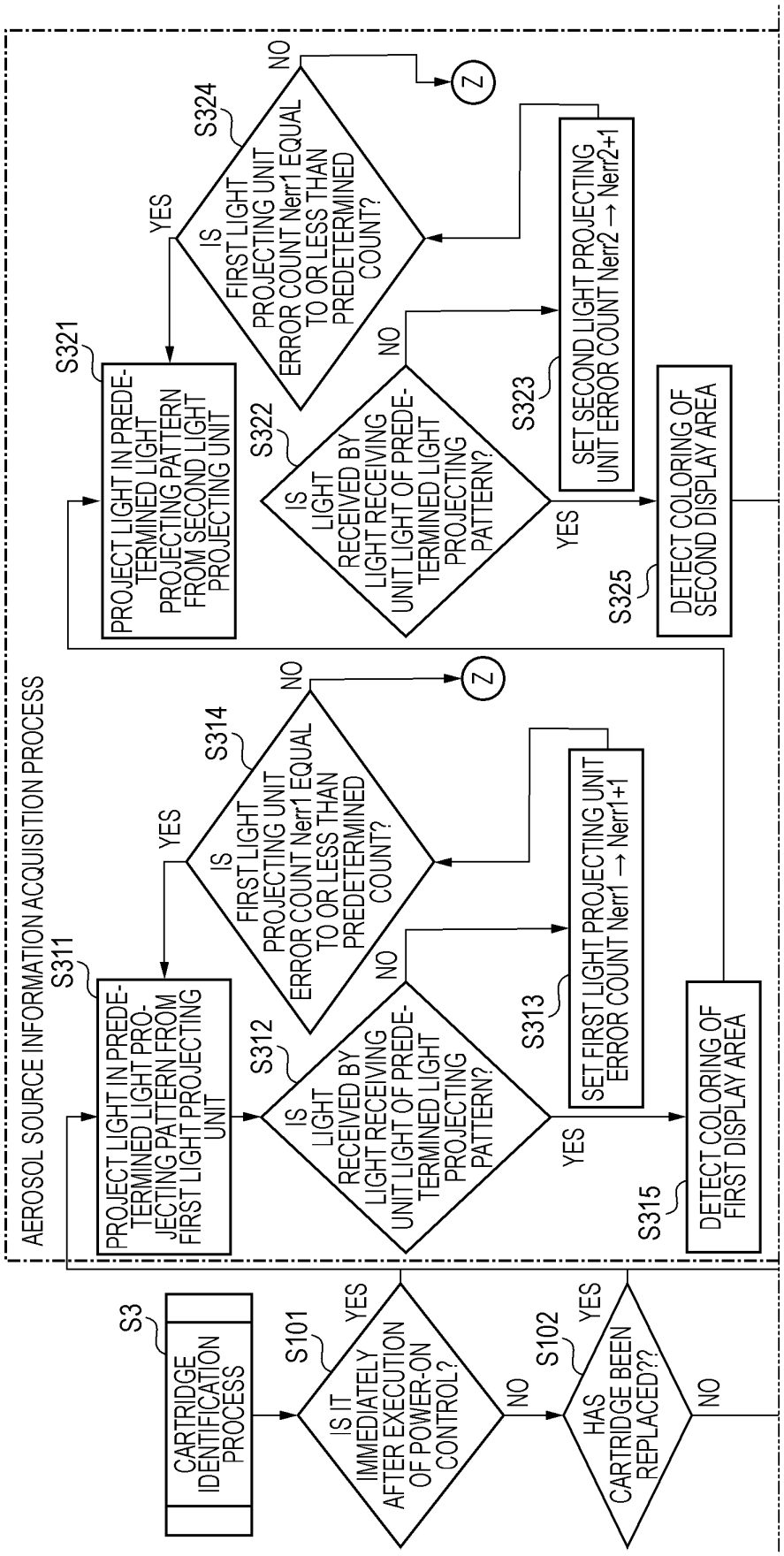
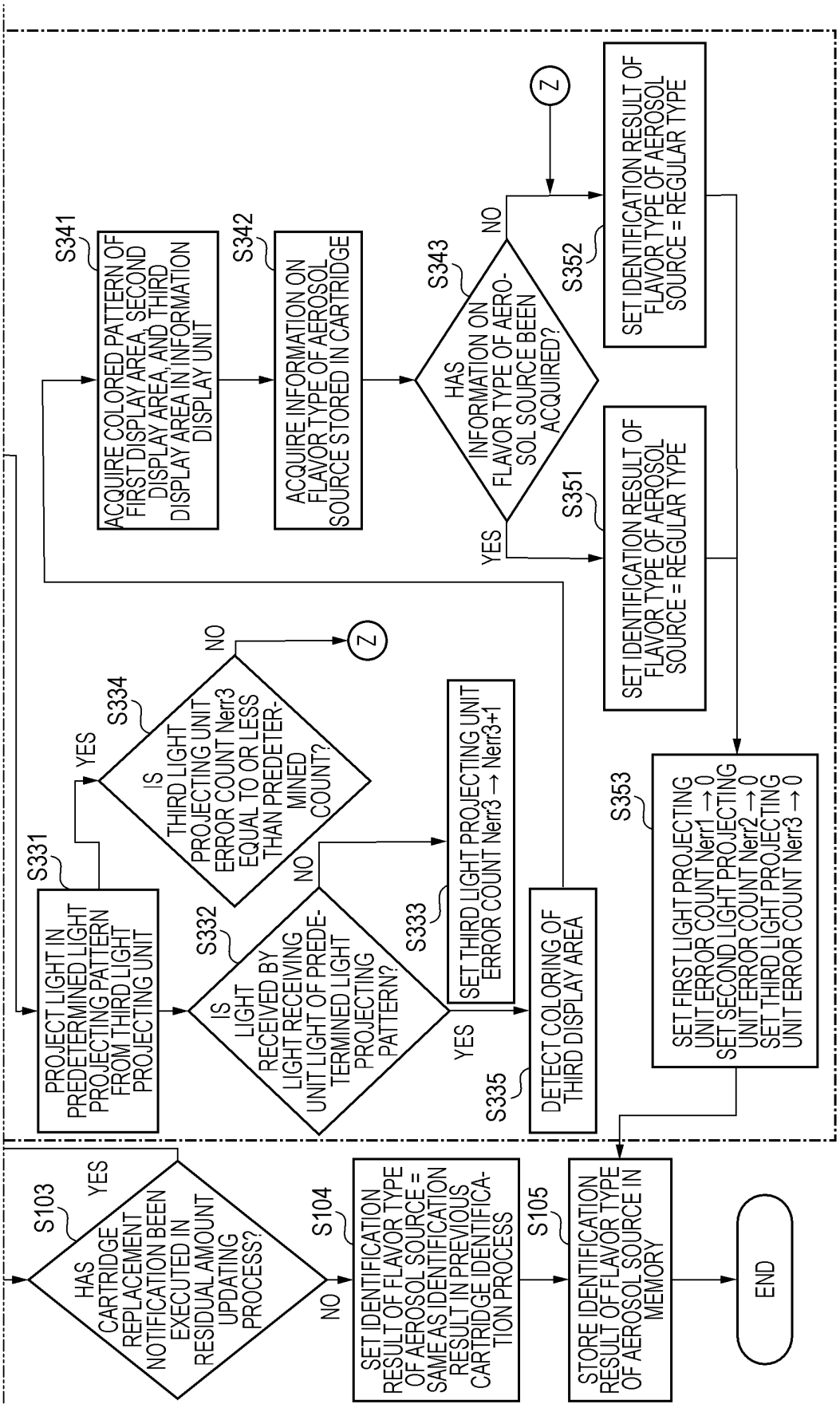
46a
40
461
49
493
492
491
411
411a
63
25
20
24
22
MCU
21
241c (241)
241b (241)
241a (241)
242
23
263c (26)
263b (26)
263a (26)
263d (26)

FIG. 18


S3
CARTRIDGE IDENTIFICATION PROCESS
S101
IS IT IMMEDIATELY AFTER EXECUTION OF POWER-ON CONTROL?
YES
NO
S102
HAS CARTRIDGE BEEN REPLACED??
YES
NO
AEROSOL SOURCE INFORMATION ACQUISITION PROCESS
S311
PROJECT LIGHT IN PREDETERMINED LIGHT PROJECTING PATTERN FROM FIRST LIGHT PROJECTING UNIT
S312
IS LIGHT RECEIVED BY LIGHT RECEIVING UNIT LIGHT OF PREDETERMINED LIGHT PROJECTING PATTERN?
YES
NO
S313
SET FIRST LIGHT PROJECTING UNIT ERROR COUNT Nerr1 → Nerr1+1
S314
IS FIRST LIGHT PROJECTING UNIT ERROR COUNT Nerr1 EQUAL TO OR LESS THAN PREDETERMINED COUNT?
YES
NO
Z
S315
DETECT COLORING OF FIRST DISPLAY AREA
S321
PROJECT LIGHT IN PREDETERMINED LIGHT PROJECTING PATTERN FROM SECOND LIGHT PROJECTING UNIT
S322
IS LIGHT RECEIVED BY LIGHT RECEIVING UNIT LIGHT OF PREDETERMINED LIGHT PROJECTING PATTERN?
YES
NO
S323
SET SECOND LIGHT PROJECTING UNIT ERROR COUNT Nerr2 → Nerr2+1
S324
IS FIRST LIGHT PROJECTING UNIT ERROR COUNT Nerr1 EQUAL TO OR LESS THAN PREDETERMINED COUNT?
YES
NO
Z
S325
DETECT COLORING OF SECOND DISPLAY AREA
(CONT.)

(FIG. 18 Continued)



INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2022/008585

A. CLASSIFICATION OF SUBJECT MATTER

A24F 40/51(2020.01)i; ***A24F 40/57***(2020.01)i
FI: A24F40/51; A24F40/57

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A24F40/51; A24F40/57

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Published examined utility model applications of Japan 1922-1996
Published unexamined utility model applications of Japan 1971-2022
Registered utility model specifications of Japan 1996-2022
Published registered utility model applications of Japan 1994-2022

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2020/235062 A1 (JAPAN TOBACCO INC) 26 November 2020 (2020-11-26) entire text, all drawings	1-15
A	JP 2015-506170 A (PHILIP MORRIS PRODUCTS S.A) 02 March 2015 (2015-03-02) entire text, all drawings	1-15
A	JP 2011-515093 A (PHILIP MORRIS PRODUCTS S.A) 19 May 2011 (2011-05-19) entire text, all drawings	1-15

☐ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

* Special categories of cited documents:
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"E" earlier application or patent but published on or after the international filing date
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"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
22 April 2022	**10 May 2022**
Name and mailing address of the ISA/JP **Japan Patent Office (ISA/JP)** **3-4-3 Kasumigaseki, Chiyoda-ku, Tokyo 100-8915** **Japan**	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/JP2022/008585

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
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		PT 2471392 E	
		ES 2437474 T3	
		UA 100882 C2	

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/JP2022/008585

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
		HK 1173345 A1	
		BR PI0911137 A2	
		MY 155523 A	
		ZA 201006335 B	
		PL 2471392 T3	

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Patent documents cited in the description

- JP 2019150031 A **[0006]**
- JP 2012513750 A **[0006]**
- JP 2021063181 A **[0385]**