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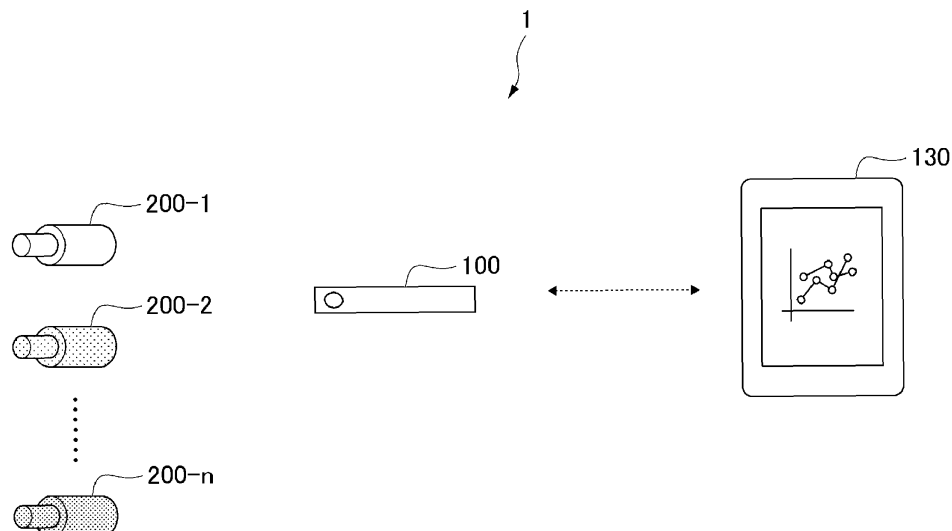
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(54) **SYSTEM, ACCESSORY UNIT, DEVICE, CONTROL METHOD, AND PROGRAM**

(57) A system according to one aspect of the present application comprises a device that has a power source, and a plurality of accessory units that are detachably attached to a device and that provide functions to the de-

vice, wherein the device is capable of executing functions respectively provided by the plurality of accessory units in response to the attachment of the plurality of accessory units.

FIG. 1



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Description

Technical Field

[0001] The present invention relates to a system, an accessory unit, a device, a control method, and a program.

Background Art

[0002] In recent years, techniques for incorporating sensor functions and communication functions into accessories that can be attached to reduced-risk products (RRP) devices have been developed (e.g., refer to Patent Literature 1 and 2). Here, reduced-risk products are defined as products that can reduce health risks associated with smoking, unlike conventional cigarettes. Reduced-risk products include electronic cigarettes and heated cigarettes.

[0003] Patent Literature 1, for example, discloses a sensor that can be removably attached to an RRP device and that transmits sensor data to an external apparatus. Patent Literature 2, for example, discloses an RRP device that transmits certain data using a communication mechanism removably attached to a tip of the RRP device.

Citation List

Patent Literature

[0004]

Patent Literature 1: International Publication No. WO 2019/129548

Patent Literature 2: International Publication No. WO 2018/215629

Summary of Invention

Technical Problem

[0005] The above-described techniques, however, assume that one accessory unit is attached to a device. A function that can be added to the device, therefore, is limited to a function of the accessory unit.

[0006] The present invention has been made in view of the aforementioned point and aims to provide a system, an accessory unit, a device, a control method, and a program capable of increasing functions of a device.

Solution to Problem

[0007] According to an embodiment of the present invention, a system including a device including a power supply and a plurality of accessory units that are removably attached to the device and that provide functions for

the device is provided. The device is configured to perform the functions provided by each of the plurality of accessory units in response to attachment of the plurality of accessory units.

[0008] In the embodiment, one of the plurality of accessory units may be a smoking function provision accessory unit that provides a smoking function.

[0009] In the embodiment, the smoking function provision accessory unit may include a heating heater for heating a stick or an atomization heater for atomizing a liquid.

[0010] In the embodiment, one of the plurality of accessory units may include an information collection function provision accessory unit that provides a function of collecting information.

[0011] In the embodiment, the information collection function provision accessory unit may include a data collection sensor that collects various types of data.

[0012] In the embodiment, the data collection sensor may include at least one of a smoking data collection sensor capable of collecting smoking data, a biosensor capable of obtaining biological data, or a positional information collection sensor capable of collecting positional information.

[0013] In the embodiment, the information collection function provision accessory unit may include a communication module that provides a communication function.

[0014] In the embodiment, each of a plurality of the communication modules may be capable of performing communication using a different communication method.

[0015] In the embodiment, one of the plurality of accessory units may include an operation provision accessory unit that provides a certain operation.

[0016] In the embodiment, the operation provision accessory unit may include at least one of a function of generating a sound, a function of generating light, a function of generating a scent, a vibration function, or a display function.

[0017] In the embodiment, the device may identify, using attachment of at least one of the plurality of accessory units as a trigger, a function provided by the attached accessory unit and change a processing mode of the device on a basis of the identified function.

[0018] According to another embodiment of the present invention, an accessory unit that is one of a plurality of accessory units providing functions for a device is provided. In a case where the accessory unit is attached to the device, the accessory unit provides the corresponding function for the device.

[0019] According to another embodiment of the present invention, a device including a power supply and a controller configured to perform functions provided by each of a plurality of accessory units is provided. The controller is configured to perform the functions provided by each of the plurality of accessory units in response to attachment of the plurality of accessory units.

[0020] According to another embodiment of the present invention, a control method performed by a system including a step of, using a device, detecting attach-

ment of a plurality of accessory units, a step of, using the plurality of accessory units, providing functions for the device, and a step of, using the device, enabling the functions provided by the plurality of accessory units is provided.

[0021] According to another embodiment of the present invention, a program for causing a computer of a device to perform a process including a step of detecting attachment of a plurality of accessory units and a step of enabling functions provided by the plurality of accessory units is provided.

Advantageous Effects of Invention

[0022] According to the embodiments of the present invention, a system, an accessory unit, a device, a control method, and a program capable of increasing functions of a device can be provided.

Brief Description of Drawings

[0023]

[FIG. 1] FIG. 1 is a diagram illustrating an example of a system according to the present embodiment.
[FIG. 2] FIG. 2 is a diagram illustrating a configuration example of a device according to the present embodiment.

[FIG. 3] FIG. 3 is a diagram illustrating a first configuration example of an accessory unit according to the present embodiment.

[FIG. 4] FIG. 4 is a diagram illustrating a second configuration example of the accessory unit according to the present embodiment.

[FIG. 5] FIG. 5 is a schematic diagram schematically illustrating a third configuration example of the accessory unit according to the present embodiment.

[FIG. 6] FIG. 6 is a schematic diagram schematically illustrating a fourth configuration example of the accessory unit according to the present embodiment.

[FIG. 7] FIG. 7 is a schematic diagram schematically illustrating a fifth configuration example of the accessory unit according to the present embodiment.

[FIG. 8] FIG. 8 is a diagram schematically illustrating a configuration example of attachment of accessory units to the device according to the present embodiment.

[FIG. 9] FIG. 9 is a diagram illustrating a first example of operations performed by the system according to the present embodiment.

[FIG. 10] FIG. 10 is a diagram illustrating a second example of the operations performed by the system according to the present embodiment.

[FIG. 11] FIG. 11 is a diagram illustrating a third example of the operations performed by the system according to the present embodiment.

[FIG. 12] FIG. 12 is a diagram illustrating a fourth example of the operations performed by the system

according to the present embodiment.

[FIG. 13] FIG. 13 is a diagram illustrating a configuration example of an accessory unit according to a modification of the embodiment.

[FIG. 14] FIG. 14 is a diagram schematically illustrating a configuration example of attachment of the accessory unit to a device according to the modification of the embodiment.

10 Description of Embodiments

[0024] Next, a system, an accessory, a device, a control method, and a program according to the present embodiment will be described with reference to the drawings. The embodiment that will be described hereinafter is an example, and embodiments to which the present invention is applied are not limited to the following embodiment.

[0025] Throughout the drawings for describing the embodiment, elements having the same functions are given the same reference numerals, and repeated description thereof is omitted.

[0026] "On the basis of XX" in the present disclosure means "at least on the basis of XX" and includes a case where elements other than XX are also used as a basis. "On the basis of XX" is not limited to a case where XX is directly used and includes a case where XX subjected to an arithmetic operation or processing is used as a basis. "XX" may be any element (e.g., any information).

30 (Embodiment)

(System)

[0027] The system according to an embodiment of the present invention will be described with reference to the drawings.

[0028] FIG. 1 is a diagram illustrating an example of the system according to the present embodiment. A system 1 according to the present embodiment includes a device 100 and accessory units 200-1 to 200-n (n is an integer larger than zero). One or a plurality of the accessory units 200-1 to 200-n are attached to the device 100.

[0029] An example of the device 100 is a reduced-risk products (RRP) device. An RRP is defined as a product that can reduce health risks associated with smoking. The device 100 includes a power supply and a communication function.

[0030] Each of the accessory units 200-1 to 200-n is removably attached to the device 100. Each of the accessory units 200-1 to 200-n provides a function for the device 100 when attached to the device 100.

[0031] Any of the accessory units 200-1 to 200-n will be referred to as an accessory unit 200 hereinafter.

[0032] FIG. 1 illustrates a terminal apparatus 130 in addition to the device 100 and the accessory units 200-1 to 200-n. The terminal apparatus 130 communicates with the device 100 and/or the accessory unit 200 having a

communication function. The device 100 and the accessory unit 200 will be described in detail hereinafter.

«1. Configuration Example of Device»

[0033] The device 100 can execute a function provided by the accessory unit 200 when the accessory unit 200 is attached thereto.

[0034] FIG. 2 is a diagram illustrating a configuration example of the device according to the present embodiment. As illustrated in FIG. 2, the device 100 in this configuration example includes a power supply unit 110. The power supply unit 110 includes a power supply 111, a sensor 112, a notifier 113, a memory 114, a communicator 115, and a controller 116. An example of the device 100 may include an air inlet hole, an airflow path, and an air outlet hole. With this configuration, when the accessory unit 200 that provides a smoking function for the device 100 is attached to the device 100, an aerosol (smoke) can pass through the air inlet hole, the airflow path, and the air outlet hole.

[0035] The power supply 111 accumulates power. The power supply 111 supplies power to the components of the device 100 under control of the controller 116. The power supply 111 can be achieved, for example, by a rechargeable battery such as a lithium-ion secondary battery. The power supply 111 may be connected to an external power supply by USB (universal serial bus) cable or the like and charged. Alternatively, the power supply 111 may be charged using a wireless power transmission technique without being connected to a device that transmits power. In other examples, only the power supply 111 may be removable from the device 100 or replaceable by a new power supply 111.

[0036] When one or a plurality of accessory units 200 are attached to the device 100, the power supply 111 supplies power to each of the one or plurality of accessory units 200. The power supply 111 supplies power to the one or plurality of accessory units 200 connected to the device 100 under control of the controller 116.

[0037] The sensor 112 obtains various pieces of information regarding the device 100. The sensor 112 also detects one or a plurality of accessory units 200 attached to the device 100. More specifically, the sensor 112 detects one or a plurality of accessory units 200 electrically connected to the device 100. The sensor 112 obtains various pieces of information from each of the one or plurality of accessory units 200 connected to the device 100. The sensor 112 then outputs the obtained pieces of information to the controller 116.

[0038] In an example, the sensor 112 is achieved by a pressure sensor such as a microphone condenser, a flowrate sensor, a temperature sensor, or the like. When the sensor 112 detects a value associated with inhalation by the user, the sensor 112 outputs information indicating the inhalation by the user to the controller 116.

[0039] In another example, the sensor 112 is achieved by an input device, such as a button or a switch, that

receives an input of information from the user. The sensor 112 can include a button for requesting a start and a stop of generation of an aerosol. The sensor 112 then outputs the information input by the user to the controller 116.

[0040] The notifier 113 notifies the user of information. In an example, the notifier 113 is achieved by a light emission device such as an LED (light-emitting diode). In this case, the notifier 113 emits light in different light emission patterns when the power supply 111 needs to be charged, when the power supply 111 is being charged, and when an abnormality has occurred in the device 100. The light emission patterns are a concept including color and timings of turning on and off. The notifier 113 may be achieved by a display device that displays images, a sound output device that outputs sounds, a vibration device that vibrates, or the like in addition to, or instead of, the light emission device.

[0041] The memory 114 stores various pieces of information for operating the device 100. The memory 114 is achieved, for example, by a nonvolatile storage medium such as a flash memory. An example of the information stored in the memory 114 is information regarding an OS (operating system) of the device 100, such as how the controller 116 controls the various components. Another example of the information stored in the memory 114 is information regarding inhalation by the user, such as the number of inhalations, times of inhalations, and an accumulated inhalation time period.

[0042] The communicator 115 is a communication interface for communicating information between the device 100 and other apparatuses such as the terminal apparatus 130 and the accessory unit 200. The communicator 115 is a communication interface capable of performing communication in accordance with any wired or wireless communication standard. The communication standard may be, for example, a wireless LAN (local area network), a wired LAN, Wi-Fi (registered trademark), Bluetooth (registered trademark), or the like. In an example, the communicator 115 transmits, to the terminal apparatus 130 such as a smartphone, information regarding inhalation by the user in order to display the information regarding the inhalation by the user on the smartphone. In another example, the communicator 115 receives, from a server (not illustrated), information regarding a new OS in order to update the information regarding an OS stored in the memory 114. In another example, the communicator 115 transmits an accessory information request to the accessory unit 200. The communicator 115 then receives an accessory information response transmitted from the accessory unit 200 in response to the transmitted accessory information request. The communicator 115 may communicate information with the accessory unit 200 by electrically or physically connecting to the accessory unit 200 through a terminal, an electrode, or the like, for example, and communicating with the accessory unit 200 in accordance with any wired communication standard. Alternatively, the communicator 115 may communicate information with the accessory

unit 200 by communicating with the accessory unit 200 in accordance with any wireless communication standard.

[0043] The controller 116 functions as an arithmetic processing device and a control device and controls the whole operation of the device 100 and the whole operation of the accessory unit 200 connected to the device 100 in accordance with various programs. The controller 116 is achieved, for example, by an electronic circuit such as a CPU (central processing unit) or a microprocessor. The controller 116 may also include a ROM (read-only memory) storing the programs to be used, operation parameters, and the like and a RAM (random-access memory) that temporarily stores parameters and the like that change as necessary. The device 100 and the accessory unit 200 connected to the device 100 perform various types of processing under control of the controller 116.

[0044] The supply of power from the power supply 111 to the other components, the charging of the power supply 111, the detection of information by the sensor 112, the notification of information by the notifier 113, the storing and reading of information by the memory 114, and the communication of information by the communicator 115 are examples of processing controlled by the controller 116.

[0045] The controller 116 also controls other types of processing performed by the device 100, such as inputting of information to the components and processing based on information output from the components. The controller 116 also controls the detection of the accessory unit 200 by the sensor 112, the creation of an accessory information request for requesting information regarding the accessory unit 200 based on the detection of the accessory unit 200, the reception of an accessory information request by the communicator 115, the reception of an accessory information response by the communicator 115, obtaining of information for identifying a function of the accessory unit 200 included in an accessory information response, a change to a processing mode based on obtained information for identifying a function of the accessory unit 200, and processing based on a result of the change to the processing mode. The controller 116 performs processing on the basis of an address of the device 100 and an address (IP address) of the accessory unit 200.

[0046] An example of the information for identifying the function of the accessory unit 200 is, when the accessory unit 200 includes a puff sensor, information indicating the puff sensor or, when the accessory unit 200 includes a heating unit, information indicating a type (a peripheral heating type etc.) of a heater.

[0047] An example of the change to the processing mode based on obtained information for identifying a function of the accessory unit 200 and the processing based on a result of the change to the processing mode is, when the accessory unit 200 includes a puff sensor, a change of the processing mode to a smoking mode and, when information indicating detection of a puff is

received from the accessory unit 200, waiting in a state where processing for storing the information indicating the detection of the puff in the memory 114 of the device 100 can be performed. When the communicator 115 of the device 100 then receives the information indicating the detection of the puff from the accessory unit 200, the controller 116 starts processing for obtaining the information indicating the detection of the puff received by the communicator 115 and storing the obtained information indicating the detection of the puff in the memory 114.

[0048] Another example of the change to the processing mode based on obtained information for identifying a function of the accessory unit 200 and the processing based on a result of the change to the processing mode is, when the accessory unit 200 includes a sound output device (audio unit), a change of the processing mode to an operation mode and waiting in a state where processing for outputting audio information under a certain condition can be performed. When audio information to be output then arises, the controller 116 in the device 100 outputs the audio information to the accessory unit 200.

[0049] Another example of the change to the processing mode based on obtained information for identifying a function of the accessory unit 200 and the processing based on a result of the change to the processing mode is, when the accessory unit 200 includes a heater, a change of the processing mode to the smoking mode and waiting for an input of information indicating a start of heating by the heater (detection of a puff, pressing of a button, etc.). When the sensor 112 in the device 100 receives the input, the controller 116 causes the power supply 111 to start to supply power to the heater.

[0050] A configuration example of the device 100 has been described. It is needless to say that the configuration of the device 100 is not limited to that described above, and one of various configurations described hereinafter may be employed, instead.

[0051] In an example, the power supply unit 110 need not include the communicator 115. In this case, the communicator 115 is provided separately from the power supply unit 110.

«2. Configuration Example of Accessory Unit»

[0052] The accessory unit 200 is a device that increases the functions of the device 100 when attached to the device 100. An information collection function, an operation function, and a smoking function will be described as examples of a function provided by the accessory unit 200 for the device 100.

(1) First Configuration Example

[0053] FIG. 3 is a diagram illustrating a first configuration example of the accessory unit according to the present embodiment. As illustrated in FIG. 3, an accessory unit 200-1 in this configuration example includes an electrode mechanism 201-1, a communicator 202-1, a

sensor 203-1, and a controller 210-1. The first configuration example of the accessory unit provides the information collection function for the device 100. An example of the accessory unit 200-1 may include an air inlet hole, an airflow path, and an air outlet hole. With this configuration, when the accessory unit 200-1 is attached to the device 100 along with the accessory unit 200 that provides the smoking function, an aerosol (smoke) can pass through the air inlet hole, the airflow path, and the air outlet hole.

[0054] When the accessory unit 200-1 is attached to the device 100 directly or through another accessory unit 200, the power supply 111 of the device 100 supplies power to the electrode mechanism 201-1 directly or through the other accessory unit 200. In the device 100, the power supply 111 supplies power to the components of the accessory unit 200-1 under control of the controller 116.

[0055] When the accessory unit 200-1 is connected to the device 100 directly or through another accessory unit 200 and yet another accessory unit 200 is also attached to the device 100, the electrode mechanism 201-1 supplies power supplied from the power supply 111 of the device 100 directly or through the other accessory unit 200 to the yet other accessory unit 200. In the device 100, the power supply 111 supplies power to the components of the accessory unit 200-1 under control of the controller 116.

[0056] The communicator 202-1 is a communication interface capable of performing communication in accordance with any wired or wireless communication standard. The communication standard may be, for example, Wi-Fi (registered trademark), Bluetooth (registered trademark), near-field communication (NFC), LPWA (low-power, wide-area), or the like. The communicator 202-1 communicates with the device 100 bidirectionally. The communicator 202-1 receives an accessory information request transmitted from the device 100. The communicator 202-1 then transmits an accessory information response output from the controller 210-1 in response to the received accessory information request. The communicator 202-1 communicates with the terminal apparatus 130 bidirectionally. For example, the communicator 202-1 transmits data detected by the sensor 203-1 to the terminal apparatus 130. The communicator 202-1 also receives control information transmitted from the terminal apparatus 130. The controller 210-1 obtains the control information received by the communicator 202-1 and performs control on the basis of the obtained control information. The communicator 202-1 may communicate information with the device 100 by electrically or physically connecting to the device 100 through a terminal or the electrode mechanism 201-1, for example, and communicating with the device 100 in accordance with any wired communication standard. Alternatively, the communicator 202-1 may communicate information with the device 100 by communicating with the device 100 in accordance with any wireless communication

standard.

[0057] The sensor 203-1 is achieved by a sensor capable of obtaining smoking data, such as a puff sensor or a fluid sensor, a biosensor capable of obtaining biological data, such as a saliva sensor, a pulse sensor, a heart rate monitor, or a blood pressure sensor, an acceleration sensor, or the like. The sensor 203-1 detects behavior of the device 100 and behavior of another accessory unit 200.

[0058] An example of the puff sensor is a sensor for detecting inhalation by the user. The puff sensor may be a sensor of any type for detecting inhalation by the user, such as a flow rate sensor, a flow velocity sensor, or a pressure sensor. Alternatively, the puff sensor may be a button to be pressed to allow the user to inhale. Alternatively, the puff sensor may be, for example, an inhalation sensor. When the accessory unit 200 for providing the smoking function is attached, the puff sensor may detect inhalation by the user using a flavor inhaler or the like. Alternatively, the puff sensor may be an airflow sensor and detect airflow caused by inhalation by the user.

[0059] An example of the fluid sensor may include a (infrared or visible) light emitter, a detector, a rotating disc with a window, a stator, and a holder. The disc may include a slanted window for converting airflow into rotational thrust. The airflow rotates the disc. Rotation speed of the disc depends on the airflow. The fluid sensor may detect rotation speed using frequency of light pulses from the light emitter received by the detector. In another embodiment, the disc includes a reflection surface. The light emitter and the detector are provided on the same surface of a front plate. When the disc rotates, the detector finds pulses reflected from the surface of the disc. In another embodiment, an axis of the disc has an angle of 90° relative to the airflow like a water wheel.

[0060] An example of the saliva sensor is an electrochemical sensor. The electrochemical sensor includes a mouse and nose molecular sensitive coating provided on a transducer, and the transducer translates selective binding of mouse and nose molecules on the coating into signals or changes in signals. For example, binding of mouse and nose molecules can result in a change in frequency, current, or voltage that can correlate with the amount of mouse and nose molecules present in saliva or breath of a smoker. A change in mass of the coating results in a change in resonant frequency of the transducer, which is translated into a proportional electrical signal.

[0061] The controller 210-1 functions as an arithmetic processing device and a control device and controls the whole operation of the accessory unit 200-1 in accordance with various programs. The controller 210-1 is achieved, for example, by an electronic circuit such as a CPU or a microprocessor. The controller 210-1 obtains an accessory information request received by the communicator 202-1. The controller 210-1 creates, on the basis of the obtained accessory information request, an accessory information response including information for

identifying a function of the accessory unit 200-1. The controller 210-1 outputs the created accessory information response to the communicator 202-1.

[0062] A configuration example of the accessory unit 200-1 has been described. It is needless to say that the configuration of the accessory unit 200-1 is not limited to that described above, and one of various configurations that will be described hereinafter may be employed, instead.

[0063] In an example, the accessory unit 200-1 may further include a positional information obtaining section. For example, the positional information obtaining section obtains positional information that can be obtained from a satellite navigation system such as a global positioning system (GPS) and/or another satellite navigation system, a positioning service that can be provided by a cellular network, or a wireless local area network (WLAN) access point. In this case, the communicator 202-1 transmits a result of positioning obtained by the positional information obtaining section to the device 100.

[0064] In an example, the accessory unit 200-1 may further include a sound recognition function section capable of recognizing a sound uttered by the user. For example, the sound recognition function section recognizes a sound uttered by the user and transmits, to the device 100 through the communicator 202-1, a request for processing based on the sound. The controller 116 of the device 100 controls each of the functions of the device in accordance with the request for the processing based on the sound uttered by the user received from the accessory unit 200-1.

[0065] For example, the accessory unit 200-1, which is the sound recognition function section, recognizes a sound uttered by the user, "Start heating", and transmits, to the device 100, information for requesting a start of heating of a heater. The controller 116 of the device 100 then, on the basis of the received information for requesting heating of a heater, starts heating of a heater included in the device 100 or transmits, to another accessory unit, a control signal for starting heating of a heater included in the other accessory unit 200.

[0066] In another example, the accessory unit 200-1, which is the sound recognition function section, may recognize a sound uttered by the user, "Increase (or reduce) vapor", and transmit, to the device 100, information for requesting control of a heater for increasing (or reducing) vapor. The controller 116 of the device 100 then, on the basis of the information for requesting control of a heater, controls the heater included in the device 100 such that vapor will be increased (or reduced) or transmits, to another accessory unit, a control signal for controlling a heater included in the other accessory unit 200 such that vapor will be increased (or decreased).

[0067] In another example, the accessory unit 200-1, which is the sound recognition function section, may recognize a sound uttered by the user, "Glow", and transmit, to the device 100, information for requesting the notifier 113, which is the light emission device such as an LED,

to light up. In another example, the accessory unit 200-1, which is the sound recognition function section, may recognize a sound uttered by the user, "Play music", and transmit, to the device 100, information for requesting outputting of music. The controller 116 of the device 100 may transmit, to another accessory unit 200 that is a sound output device (audio unit) on the basis of the information for requesting outputting of music, a control signal for requesting outputting of music.

(2) Second Configuration Example

[0068] FIG. 4 is a diagram illustrating a second configuration example of the accessory unit according to the present embodiment. As illustrated in FIG. 4, an accessory unit 200-2 in this configuration example includes an electrode mechanism 201-2, a communicator 202-2, a notifier 204-2, and a controller 210-2. In the second configuration example of the accessory unit, an operation function is provided for the device 100. An example of the accessory unit 200-2 may include an air inlet hole, an airflow path, and an air outlet hole. With this configuration, when the accessory unit 200-2 is attached to the device 100 along with the accessory unit 200 that provides the smoking function, an aerosol (smoke) can pass through the air inlet hole, the airflow path, and the air outlet hole.

[0069] When the accessory unit 200-2 is attached to the device 100 directly or through another accessory unit 200, the power supply 111 of the device 100 supplies power to the electrode mechanism 201-2 directly or through the other accessory unit 200. In the device 100, the power supply 111 supplies power to the components of the accessory unit 200-2 under control of the controller 116.

[0070] When the accessory unit 200-2 is connected to the device 100 directly or through another accessory unit 200 and yet another accessory unit 200 is also attached to the device 100, the electrode mechanism 201-2 supplies power supplied from the power supply 111 of the device 100 directly or through the other accessory unit 200 to the yet other accessory unit 200. In the device 100, the power supply 111 supplies power to the components of the accessory unit 200-2 under control of the controller 116.

[0071] The communicator 202-2 is a communication interface capable of performing communication in accordance with any wired or wireless communication standard. The communication standard may be, for example, Wi-Fi (registered trademark), Bluetooth (registered trademark), near-field communication, LPWA, or the like. The communicator 202-2 communicates with the device 100 bidirectionally. The communicator 202-2 receives an accessory information request transmitted from the device 100. The communicator 202-2 then receives an accessory information response output from the controller 210-2 in response to the received accessory information request. The communicator 202-2 may

communicate information with the device 100 by electrically or physically connecting to the device 100 through a terminal or the electrode mechanism 202-2, for example, and communicating with the device 100 in accordance with any wired communication standard. Alternatively, the communicator 202-2 may communicate information with the device 100 by communicating with the device 100 in accordance with any wireless communication standard.

[0072] The notifier 204-2 notifies the user of information. The notifier 204-2 is achieved, for example, by a sound output device that generates a voice or a sound, a light emission device that emits light, a scent generation device that generates a scent, or the like. An example of the sound output device is a speaker that provides information for the user using a voice or a sound. An example of the light emission device may be an LED (light-emitting diode) that emits light of a certain color, namely a blue LED, for example, and a certain change may be emission of light of a certain color such as blue. The certain color is not limited to blue, and may be any color. The certain change may be a change in the color or intensity of emitted light based on strength of inhalation detected by the sensor 112 in the device 100. The light emission device is not limited to an LED, and may be a light source that has another configuration and that emits light of the certain color.

[0073] An example of the scent generation device may be one that generates a scent when attached to the notifier 204-2 or one to which a formulated scent is transmitted, that receives the transmitted formulated scent, and that outputs the formulated scent.

[0074] The controller 210-2 functions as an arithmetic processing device and a control device and controls the whole operation of the accessory unit 200-2 in accordance with various programs. The controller 210-2 is achieved, for example, by an electronic circuit such as a CPU or a microprocessor. The controller 210-2 obtains an accessory information request received by the communicator 202-2. The controller 210-2 creates an accessory information response including information for identifying a function of the accessory unit 200-2 on the basis of the obtained accessory information request. The controller 210-2 outputs the created accessory information response to the communicator 202-2.

[0075] A configuration example of the accessory unit 200-2 has been described. It is needless to say that the configuration of the accessory unit 200-2 is not limited to that described above, and one of various configurations described hereinafter may be employed, instead.

[0076] In an example, the accessory unit 200-2 may also include a vibration device that vibrates and/or a display device. In this case, when time remaining in one use becomes a certain period of time or when the number of inhalations remaining becomes a certain value, one or both of the vibration device and the display device output a notification.

[0077] An example of the vibration device is a vibrator

that provides information for the user through vibration. An example of the display device may be a liquid crystal display, an organic EL (electro luminescence) display, or the like. The controller 210-2 causes the display device to display information obtained by the device 100 and/or another accessory unit 200. As a result, information can be provided for the user. Such information may include, for example, various pieces of information regarding a battery and, more specifically, can include a remaining battery charge level, information that warns of a low battery charge level, information that prompts the user to charge the battery, time required to charge the battery, information indicating battery degradation, the number of battery charges (per day, per week, per month, etc.), time elapsed since a last battery charge, and the like. The notifier 204-2 may present such information to the user by displaying a banner or a pop-up window on the display device. Alternatively, the notifier 204-2 may present such information to the user as a push notification from an application.

(3) Third Configuration Example

[0078] FIG. 5 is a schematic diagram schematically illustrating a third configuration example of the accessory unit according to the present embodiment. An accessory unit 200-3 in this configuration example produces a substance to be inhaled by the user. The third configuration example of the accessory unit provides the smoking function for the device 100. It is assumed in the following description that the substance produced by the accessory unit 200-3 is an aerosol. Alternatively, the substance produced by the accessory unit 200-3 may be a gas, instead. The inhalation, by the user, of the substance produced by the accessory unit 200-3 will also be simply referred to as "inhalation" or a "puff" hereinafter. An example of components of the accessory unit 200-3 will be described hereinafter.

[0079] The accessory unit 200-3 includes an electrode mechanism 201-3, a communicator 202-3, a controller 210-3, and a cartridge 220-3.

[0080] When the accessory unit 200-3 is attached to the device 100 directly or through another accessory unit 200, the power supply 111 of the device 100 supplies power to the electrode mechanism 201-3 directly or through the other accessory unit 200. In the device 100, the power supply 111 supplies power to the components of the accessory unit 200-3 under control of the controller 116.

[0081] When the accessory unit 200-3 is attached to the device 100 directly or through another accessory unit 200 and yet another accessory unit 200 is also attached to the device 100, the electrode mechanism 201-3 supplies power supplied from the power supply 111 of the device 100 directly or through the other accessory unit 200 to the yet other accessory unit. In the device 100, the power supply 111 supplies power to the components of the accessory unit 200-3 under control of the controller

116.

[0082] The communicator 202-3 is a communication interface capable of performing communication in accordance with any wired or wireless communication standard. The communication standard may be, for example, Wi-Fi (registered trademark), Bluetooth (registered trademark), near-field communication, LPWA, or the like. The communicator 202-3 communicates with the device 100 bidirectionally. The communicator 202-3 receives an accessory information request transmitted from the device 100. The communicator 202-3 then receives an accessory information response output from the controller 210-3 in response to the received accessory information request. The communicator 202-3 may communicate information with the device 100 by electrically or physically connecting to the device 100 through a terminal or the electrode mechanism 202-3, for example, and communicating with the device 100 in accordance with any wired communication standard. Alternatively, the communicator 202-3 may communicate information with the device 100 by communicating with the device 100 in accordance with any wireless communication standard.

[0083] The controller 210-3 functions as an arithmetic processing device and a control device and controls the whole operation of the accessory unit 200-3 in accordance with various programs. The controller 210-3 is achieved, for example, by an electronic circuit such as a CPU or a microprocessor. The controller 210-3 obtains an accessory information request received by the communicator 202-3. The controller 210-3 creates an accessory information response including information for identifying a function of the accessory unit 200-3 on the basis of the obtained accessory information request. The controller 210-3 outputs the created accessory information response to the communicator 202-3.

[0084] The cartridge 220-3 includes a heater 221-3, a liquid guide 222-3, and a liquid storage 223-3.

[0085] The liquid storage 223-3 stores an aerosol source. The aerosol source is atomized through heating to generate an aerosol. The aerosol source is, for example, a liquid such as polyhydric alcohol, which may be glycerin or propylene glycol, or water. The aerosol source may also include a tobacco material or an extract from a tobacco material that emits a flavor component through heating. The aerosol source may also include nicotine. When the device 100 is used as a medical inhaler such as a nebulizer, the aerosol source may include a medicine to be inhaled by a patient.

[0086] The liquid guide 222-3 guides the aerosol source, which is the liquid stored in the liquid storage 223-3, from the liquid storage 223-3 and holds the aerosol source. The liquid guide 222-3 is, for example, a wick formed by twining a fiber material such as glass fiber or another porous material such as a porous ceramic. The liquid guide 222-3 is in liquid connection to the liquid storage 223-3. The aerosol source stored in the liquid storage 223-3, therefore, is spread throughout the liquid guide

222-3 by a capillary effect.

[0087] The heater 221-3 heats the aerosol source to atomize the aerosol source and generate the aerosol. The heater 221-3 is composed of any material, such as a metal or a polyimide, in any shape, such as a coil, a film, or a blade. The heater 221-3 is provided close to the liquid guide 222-3. In the example illustrated in FIG. 5, the heater 221-3 includes a metal coil wound around the liquid guide 222-3. When the heater 221-3 produces heat, therefore, the aerosol source held by the liquid guide 222-3 is heated and atomized to generate the aerosol. The heater 221-3 produces heat when receiving power from the power supply 111. In an example, the power may be supplied to generate the aerosol while the sensor 112 is detecting the user's inhalation in the device 100. In another example, the power may be supplied to generate the aerosol when the sensor 112 detects a certain user input (e.g., pressing of a button for requesting a start and a stop of generation of the aerosol) in the device 100. Subsequently, the supply of the power may be stopped when the sensor 112 detects a certain user input (e.g., subsequent pressing of the button for requesting a start and a stop of generation of the aerosol).

[0088] An airflow path 180A is a flow path of air to be inhaled by the user. The airflow path 180A has a tubular structure including an air inlet hole 181A, which is an inlet of air into the airflow path 180A, and an air outlet hole 182A, which is an outlet of air from the airflow path 180A, as two ends. As the user inhales, air flows into the airflow path 180A from the air inlet hole 181A and flows out of the airflow path 180A from the air outlet hole 182A. The air outlet hole 182A is provided in a mouthpiece 224A.

[0089] The liquid guide 222-3 is provided in the airflow path 180A. The aerosol generated by the heater 221-3 mixes with the air flowing from the air inlet hole 181A. As the user inhales, the mixture fluid of the aerosol and the air is conveyed to the air outlet hole 182A as indicated by an arrow 190A.

[0090] The mouthpiece 224A is a member held in the user's mouth during inhalation. The mouthpiece 224A includes the air outlet hole 182A of the airflow path 180A. When the user inhales with the mouthpiece 224A held in his/her mouth, the mixture fluid of the aerosol and the air conveyed through the airflow path 180A enters the user's oral cavity.

(4) Fourth Configuration Example

[0091] FIG. 6 is a schematic diagram schematically illustrating a fourth configuration example of the accessory unit according to the present embodiment. An accessory unit 200-4 in this configuration example produces a substance to be inhaled by the user. The fourth configuration example of the accessory unit provides the smoking function for the device 100. It is assumed in the following description that the substance produced by the accessory unit 200-4 is an aerosol. Alternatively, the substance produced by the accessory unit 200-4 may be a gas,

instead. The inhalation, by the user, of the substance produced by the accessory unit 200-4 will also be simply referred to as "inhalation" or a "puff" hereinafter. An example of components of the accessory unit 200-4 will be described hereinafter.

[0092] The accessory unit 200-4 includes an electrode mechanism 201-4, a communicator 202-4, a controller 210-4, a cartridge 220-4, and a flavor imparting cartridge 230-4.

[0093] When the accessory unit 200-4 is attached to the device 100 directly or through another accessory unit 200, the power supply 111 of the device 100 supplies power to the electrode mechanism 201-4 directly or through the other accessory unit 200. In the device 100, the power supply 111 supplies power to the components of the accessory unit 200-4 under control of the controller 116.

[0094] When the accessory unit 200-4 is attached to the device 100 directly or through another accessory unit 200 and yet another accessory unit 200 is attached to the device 100, the electrode mechanism 201-4 supplies power supplied from the power supply 111 of the device 100 directly or through the other accessory unit 200 to the yet other accessory unit. In the device 100, the power supply 111 supplies power to the components of the accessory unit 200-4 under control of the controller 116.

[0095] The communicator 202-4 is a communication interface capable of performing communication in accordance with any wired or wireless communication standard. The communication standard may be, for example, Wi-Fi (registered trademark), Bluetooth (registered trademark), near-field communication, LPWA, or the like. The communicator 202-4 communicates with the device 100 bidirectionally. The communicator 202-4 receives an accessory information request transmitted from the device 100. The communicator 202-4 then receives an accessory information response output from the controller 210-4 in response to the received accessory information request.

[0096] The controller 210-4 functions as an arithmetic processing device and a control device and controls the whole operation of the accessory unit 200-4 in accordance with various programs. The controller 210-4 is achieved, for example, by an electronic circuit such as a CPU or a microprocessor. The controller 210-4 obtains an accessory information request received by the communicator 202-4. The controller 210-4 creates an accessory information response including information for identifying a function of the accessory unit 200-4 on the basis of the obtained accessory information request. The controller 210-4 outputs the created accessory information response to the communicator 202-4.

[0097] The cartridge 220-4 includes a heater 221-4, a liquid guide 222-4, and a liquid storage 223-4.

[0098] The liquid storage 223-4 stores an aerosol source. The aerosol source is atomized through heating to generate an aerosol. The aerosol source is, for example, a liquid such as polyhydric alcohol, which may be

glycerin or propylene glycol, or water. The aerosol source may also include a tobacco material or an extract from a tobacco material that emits a flavor component through heating. The aerosol source may also include nicotine.

5 When the device 100 is used as a medical inhaler such as a nebulizer, the aerosol source may include a medicine to be inhaled by a patient.

[0099] The liquid guide 222-4 guides the aerosol source, which is the liquid stored in the liquid storage 223-4, from the liquid storage 223-4 and holds the aerosol source. The liquid guide 222-4 is, for example, a wick formed by twining a fiber material such as glass fiber or another porous material such as a porous ceramic. The liquid guide 222-4 is in liquid connection to the liquid storage 223-4. The aerosol source stored in the liquid storage 223-4, therefore, is spread throughout the liquid guide 222-4 by the capillary effect.

[0100] The heater 221-4 heats the aerosol source to atomize the aerosol source and generate the aerosol. The heater 221-4 is composed of any material, such as a metal or a polyimide, in any shape, such as a coil, a film, or a blade. The heater 221-4 is provided close to the liquid guide 222-4. In the example illustrated in FIG. 6, the heater 221-4 includes a metal coil wound around the liquid guide 222-4. When the heater 221-4 produces heat, therefore, the aerosol source held by the liquid guide 222-4 is heated and atomized to generate the aerosol. The heater 221-4 produces heat when receiving power from the power supply 111. In an example, the power may be supplied to generate the aerosol while the sensor 112 is detecting the user's inhalation in the device 100. In another example, the power may be supplied to generate the aerosol when the sensor 112 detects a certain user input (e.g., pressing of a button for requesting a start and a stop of generation of the aerosol) in the device 100. Subsequently, the supply of the power may be stopped when the sensor 112 detects a certain user input (e.g., subsequent pressing of the button for requesting a start and a stop of generation of the aerosol).

[0101] The flavor imparting cartridge 230-4 includes a flavor source 231-4 and a mouthpiece 224B. In the cartridge 220-4 and the flavor imparting cartridge 230-4, an airflow path 180B is formed. The components will be sequentially described hereinafter.

[0102] The flavor source 231-4 is a component for imparting a flavor component to an aerosol. The flavor source 231-4 may be a material derived from tobacco, such as shredded tobacco or a processed material obtained by forming a tobacco raw material into grains, a sheet, or powder. Alternatively, the flavor source 231-4 may include a material that is not derived from tobacco, such as a material made by use of a plant other than tobacco (e.g., mint, an herb, etc.). In an example, the flavor source 231-4 may include a flavor component such as menthol. The flavor source 231-4 may be contained in a container such as a capsule.

[0103] An airflow path 180B is a flow path of air to be inhaled by the user. The airflow path 180B has a tubular

structure including an air inlet hole 181B, which is an inlet of air into the airflow path 180B, and an air outlet hole 182B, which is an outlet of air from the airflow path 180B, as two ends. As the user inhales, air flows into the airflow path 180B from the air inlet hole 181B and flows out of the airflow path 180B from the air outlet hole 182B. In an example, the air inlet hole 181B may be a gap caused between the power supply unit 110 and the cartridge 220-4 when the cartridge 220-4 is attached to the power supply unit 110. The air outlet hole 182B is provided in the mouthpiece 224B.

[0104] In addition to the liquid guide 222-4, the flavor source 231-4 is provided in the airflow path 180B downstream of the liquid guide 222-4 (a side closer to the air outlet hole 182B). The aerosol generated by the heater 221-4 is mixed with air flowing from the air inlet hole 181B. As the user inhales, the mixture fluid of the aerosol and the air passes through the flavor source 231-4 and is conveyed to the air outlet hole 182B as indicated by an arrow 190B. When the mixture fluid of the aerosol and the air passes through the flavor source 231-4, the flavor component included in the flavor source 231-4 is imparted to the aerosol.

[0105] The mouthpiece 224B is a member held in the user's mouth during inhalation. The mouthpiece 224B includes the air outlet hole 182B of the airflow path 180B. When the user inhales with the mouthpiece 224B held in his/her mouth, the mixture fluid of the aerosol and the air conveyed through the airflow path 180B enters the user's oral cavity.

(5) Fifth Configuration Example

[0106] FIG. 7 is a schematic diagram schematically illustrating a fifth configuration example of the accessory unit according to the present embodiment. An accessory unit 200-5 in this configuration example produces a substance to be inhaled by the user. The fifth configuration example of the accessory unit provides the smoking function for the device 100. It is assumed in the following description that the substance produced by the accessory unit 200-5 is an aerosol. The accessory unit 200-5 generates the aerosol by heating a substrate including an aerosol source from the outside of the substrate. Alternatively, the substance produced by the accessory unit 200-5 may be a gas. The inhalation, by the user, of the substance produced by the accessory unit 200-5 will also be simply referred to as "inhalation" or a "puff" hereinafter. An example of components of the accessory unit 200-4 will be described hereinafter.

[0107] The accessory unit 200-5 includes an electrode mechanism 201-5, a communicator 202-5, a controller 210-5, a heater 221-5, a holder 240-5, and a heat insulator 244-5. The user inhales with a stick substrate 250-5 held in the holder 240-5.

[0108] When the accessory unit 200-5 is attached to the device 100 directly or through another accessory unit 200, the power supply 111 of the device 100 supplies

power to the electrode mechanism 201-5 directly or through the other accessory unit 200. In the device 100, the power supply 111 supplies power to the components of the accessory unit 200-5 under control of the controller 116.

[0109] When the accessory unit 200-5 is attached to the device 100 directly or through another accessory unit 200 and yet another accessory unit 200 is also attached to the device 100, the electrode mechanism 201-5 supplies power supplied from the power supply 111 of the device 100 directly or through the other accessory unit 200 to the yet other accessory unit. In the device 100, the power supply 111 supplies power to the components of the accessory unit 200-5 under control of the controller 116.

[0110] The communicator 202-5 is a communication interface capable of performing communication in accordance with any wired or wireless communication standard. The communication standard may be, for example, Wi-Fi (registered trademark), Bluetooth (registered trademark), near-field communication, LPWA, or the like. The communicator 202-5 communicates with the device 100 bidirectionally. The communicator 202-5 receives an accessory information request transmitted from the device 100. The communicator 202-5 then receives an accessory information response output from the controller 210-5 in response to the received accessory information request.

[0111] The controller 210-5 functions as an arithmetic processing device and a control device and controls the whole operation of the accessory unit 200-5 in accordance with various programs. The controller 210-5 is achieved, for example, by an electronic circuit such as a CPU or a microprocessor. The controller 210-5 obtains an accessory information request received by the communicator 202-5. The controller 210-5 creates an accessory information response including information for identifying a function of the accessory unit 200-5 on the basis of the obtained accessory information request. The controller 210-5 outputs the created accessory information response to the communicator 202-5.

[0112] The holder 240-5 has an internal space 241-5 and holds the stick substrate 250-5 with the stick substrate 250-5 partly stored in the internal space 241-5. The holder 240-5 has an opening 242-5 connecting the internal space 241-5 to the outside and holds the stick substrate 250-5 inserted into the internal space 241-5 through the opening 242-5. For example, the holder 240-5 has a tubular shape whose base is the opening 242-5 and a bottom 243-5 and defines the pillar-shaped internal space 241-5. The holder 240-5 may be configured such that an inner diameter thereof is smaller than an outer diameter of the stick substrate 250-5 in at least a part of the tubular shape in a height direction and hold the stick substrate 250-5 by compressing the stick substrate 250-5 inserted into the internal space 241-5 from the periphery. The holder 240-5 also has a function of defining a path of air flowing through the stick substrate

250-5. For example, the bottom 243-5 has an air inlet hole, from which air flows into such the path. An air outlet hole, from which air flows out of the path, on the other hand, is the opening 242-5.

[0113] The stick substrate 250-5 is a member having a shape of a stick. The stick substrate 250-5 includes a substrate 251-5 and an inhalation port 252-5.

[0114] The substrate 251-5 includes an aerosol source. The aerosol source is heated and atomized to generate an aerosol. The aerosol source may be a material derived from tobacco, such as shredded tobacco or a processed material obtained by forming a tobacco raw material into grains, a sheet, or powder. Alternatively, the aerosol source may include a material that is not derived from tobacco, such as a material made by use of a plant other than tobacco (e.g., mint, an herb, etc.). In an example, the aerosol source may include a flavor component such as menthol. When the device 100 is used as a medical inhaler such as a nebulizer, the aerosol source may include a medicine to be inhaled by a patient. The aerosol source is not limited to a solid, and may be, for example, a liquid such as polyhydric alcohol, which may be glycerin or propylene glycol, or water. The substrate 251-5 is at least partly stored in the internal space 241-5 of the holder 240-5 with the stick substrate 250-5 held by the holder 240-5

[0115] The inhalation port 252-5 is a member held in the user's mouth during inhalation. The inhalation port 252-5 at least partly protrudes from the opening 242-5 with the stick substrate 250-5 held by the holder 240-5. When the user inhales with the inhalation port 252-5 protruding from the opening 242-5 held in his/her mouth, air flows into the holder 240-5 through an air inlet hole, which is not illustrated. The flowing air passes through the internal space 241-5 of the holder 240-5, that is, the substrate 251-5, and reaches the inside of the user's mouth along with the aerosol generated by the substrate 251-5.

[0116] The heater 221-5 heats the aerosol source to atomize the aerosol source and generate the aerosol. The heater 221-5 is composed of any material, such as a metal or a polyimide. The heater 221-5 is formed as a film, for example, and disposed in such a way as to cover an outer circumference of the holder 240-5. When the heater 221-5 produces heat, therefore, the aerosol source is heated and atomized from an outer circumference of the stick substrate 250-5 to generate the aerosol. The heater 221-5 produces heat when receiving power from the power supply 111. In an example, the power may be supplied to generate the aerosol when the sensor 112 has detected a certain user input in the device 100. The user can inhale when temperature of the stick substrate 250-5 heated by the heater 221-5 reaches a certain value. When the sensor 112 then detects a certain user input in the device 100, the supply of power may be stopped. In another example, while the sensor 112 is detecting inhalation by the user in the device 100, power may be supplied to generate the aerosol.

[0117] The heat insulator 244-5 prevents heat from

transferring from the heater part 221-5 to the other components of the device 100. The heat insulator 244-5 is disposed in such a way as to cover at least an outer circumference of the heater 221-5. For example, the heat insulator 244-5 is composed of a vacuum heat insulator, an aerogel heat insulator, or the like. The vacuum heat insulator is a heat insulator in which glass wool, silica (silicon powder), or the like is wrapped in a resin film to achieve a high-vacuum state so that gas thermal conductivity becomes as close to zero as possible.

(Examples of Attachment of Plurality of Accessory Units)

[0118] FIG. 8 is a diagram schematically illustrating configuration examples of attachment of accessory units to a device according to the present embodiment. Here, a case where two accessory units 200 are attached to the device 100 will be described as an example. Three or more accessory units 200 may be attached to the device 100, instead.

[0119] In an example illustrated in FIG. 8(1), two accessory units 200-1 are attached to the device 100.

[0120] In a first example of this configuration example, a sensor 203-1 of one of the accessory units 200-1 is an odor sensor, and a sensor 203-1 of the other accessory unit 200-1 is a TOF (time-of-flight) sensor. When an odor is detected, a distance to the odor is measured. With this configuration, when attached to the device 100, the two accessory units 200-1 can add a function of measuring an environment to the device 100.

[0121] In a second example of this configuration example, the sensor 203-1 of one of the accessory units 200-1 is a saliva sensor, and the sensor 203-1 of the other accessory unit 200-1 is a pulse sensor. With this configuration, when attached to the device 100, the two accessory units 200-1 can add a function of measuring biological data to the device 100.

[0122] In a third example of this configuration example, one of the accessory units 200-1 includes a positioning device, and the other accessory unit 200-1 include a communicator 202-1. With this configuration, when attached to the device 100, the two accessory units 200-1 can add a function of measuring motion to the device 100. A result of positioning performed by the accessory unit 200-1 may be output to the other accessory unit 200-1, and the communicator 202-1 of the other accessory unit 200-1 may transmit the result of the positioning output from the accessory unit 200-1 to the terminal apparatus 130.

[0123] In an example illustrated in FIG. 8(2), an accessory unit 200-2 and an accessory unit 200-1 are attached to the device 100.

[0124] In a first example of this configuration example, a notifier 204-2 of the accessory unit 200-2 is at least one of a sound output device that generates sound, a light emitting device that emits light, or a vibration device that vibrates, and a sensor 203-1 of the accessory unit 200-1 is a biosensor. When a value measured by the biosensor becomes a certain value, at least one of the sound output

device, the light emitting device, or the vibration device operates. With this configuration, when attached to the device 100, the accessory unit 200-2 and the accessory unit 200-1 can add a stress alert function to the device 100.

[0125] In a second example of this configuration example, the notifier 204-2 of the accessory unit 200-2 is a display device, and the accessory unit 200-1 includes a communicator 202-1. With this configuration, when attached to the device 100, the accessory unit 200-2 and the accessory unit 200-1 can add a function of displaying data to the device 100. The device 100 receives data and outputs the received data to the accessory unit 200-1. The communicator 202-1 of the accessory unit 200-1 receives the data output from the device 100 and outputs the received data to the accessory unit 200-2. The accessory unit 200-2 receives the data output from the accessory unit 200-1 and displays the received data.

[0126] In an example illustrated in FIG. 8(3), two accessory units 200-2 are attached to the device 100.

[0127] In a first example of this configuration example, a notifier 204-2 of one of the accessory units 200-2 is a sound sensor, and a notifier 204-2 of the other accessory unit 200-2 is a light emitting device. When the sound sensor detects a sound, the light emitting device emits light. With this configuration, when attached to the device 100, the two accessory units 200-2 can add, to the device 100, a function of a light stick that can be used in concerts and other performance events.

[0128] In a second example of this configuration example, the notifier 204-2 of one of the accessory unit 200-2 is a sound output device, and the notifier 204-2 of the other accessory unit 200-2 is a scent generator. In a certain case, the sound output device outputs a sound, and the scent generator generates a scent. With this configuration, when attached to the device 100, the two accessory units 200-2 can add a function of providing a relaxing environment to the device 100.

[0129] In an example illustrated in FIG. 8(4), an accessory unit 200-3, an accessory unit 200-4, or an accessory unit 200-5 and an accessory unit 200-1 are attached to the device 100. Here, a case where the accessory unit 200-3 and the accessory unit 200-1 are attached to the device 100 will be described as an example. The description also applies to a case where the accessory unit 200-4 or the accessory unit 200-5 and the accessory unit 200-1 are attached to the device 100.

[0130] In a first example of this configuration example, the accessory unit 200-3 includes a heater 221-3 and a sensor 203-1 of the accessory unit 200-1 is at least one of a puff sensor, a fluid sensor, or a temperature sensor. With this configuration, when attached to the device 100, the accessory unit 200-3 and the accessory unit 200-1 can add a smoking function and a function of measuring a heating state of the heater 221-3 to the device 100.

[0131] In a second example of this configuration example, the accessory unit 200-3 includes a heater 221-3, and the sensor 203-1 of the accessory unit 200-1 is a

biosensor. The biosensor obtains biological data regarding the user while the user is smoking. With this configuration, when attached to the device 100, the accessory unit 200-3 and the accessory unit 200-1 can add a function of measuring behavior during smoking to the device 100.

[0132] In a third example of this configuration example, the accessory unit 200-3 includes a heater 221-3, and the accessory unit 200-1 includes a communicator 202-1. With this configuration, when the accessory unit 200-3 and the accessory unit 200-1 are attached to the device 100, the communicator 202-1 of the accessory unit 200-1 receives a profile transmitted from an external apparatus such as the terminal apparatus 130 and transmits the received profile to the accessory unit 200-3. An example of the profile is a heating profile. The communicator 202-3 of the accessory unit 200-3 receives the profile transmitted from the accessory unit 200-1. A controller 210-3 of the accessory unit 200-3, the communicator 202-1 of the accessory unit 200-1, can change the profile on the basis of the profile of an aerosol source by the heater 221-3 received by the communicator 202-3. A function of changing a profile, therefore, can be added to the device 100.

[0133] In addition, in the device 100, the communicator 115 may receive a profile transmitted from an external apparatus such as the terminal apparatus 130, and the controller 116 may change the heating profile of the aerosol source by the heater 221-3 of the accessory unit 200-2 on the basis of the profile received by the communicator 115.

[0134] In an example illustrated in FIG. 8(5), an accessory unit 200-3, an accessory unit 200-4, or an accessory unit 200-5 and an accessory unit 200-2 are attached to the device 100. Here, a case where the accessory unit 200-3 and the accessory unit 200-2 are attached to the device 100 will be described as an example. The description also applies to a case where the accessory unit 200-4 or the accessory unit 200-5 and the accessory unit 200-2 are attached to the device 100.

[0135] In a first example of this configuration example, the accessory unit 200-3 includes a heater 221-3, and a notifier 204-2 of the accessory unit 200-2 is a light emitting device. The light emitting device emits light of different colors on the basis of a heating state of the heater 221-3. With this configuration, when attached to the device 100, the accessory unit 200-3 and the accessory unit 200-2 can add a function of visualizing a heating state to the device 100.

[0136] In a second example of this configuration example, the accessory unit 200-3 includes a heater 221-3, and the notifier 204-2 of the accessory unit 200-2 is a vibration device. The vibration device vibrates at different frequencies on the basis of a heating state of the heater 221-3. With this configuration, when attached to the device 100, the accessory unit 200-3 and the accessory unit 200-2 can add a function of notifying of a heating state to the device 100.

[0137] When a plurality of accessory units 200 are attached to the device 100, the controller 116 provides a certain function, if any, that can be achieved by a combination of the plurality of accessory units 200 for the device 100.

[0138] When a function as a stress alert kit (a biosensor + a sound/light/vibration unit) is provided for the device 100, the controller 116 in the device 100 starts, if biological data collected by a biosensor indicates a certain value or larger, a process for outputting an alert sound from an audio unit on the basis of a fact that both the biosensor and the audio unit have been attached. More specifically, the controller 116 starts a process for determining whether a value of the biological data has become the certain value or larger and, if the value of the biological data has become the certain value or larger, performs a process for generating sound data and outputting the sound data to the audio unit.

(Operations of System)

[0139] FIG. 9 is a diagram illustrating a first example of operations performed by the system according to the present embodiment. Here, a case where an accessory unit 200-1 is attached to the device 100 will be described as an example.

(Step S1-1)

[0140] The accessory unit 200-1 is attached to the device 100.

(Step S2-1)

[0141] In the device 100, the sensor 112 detects the attachment of the accessory unit 200-1 to the device 100.

(Step S3-1)

[0142] In the device 100, the controller 116 creates an accessory information request for requesting information regarding the accessory unit 200-1 on the basis of a result of the detection of the attachment of the accessory unit 200-1 to the device 100.

(Step S4-1)

[0143] In the device 100, the controller 116 outputs the created accessory information request to the communicator 115. The communicator 115 obtains the accessory information request output from the controller 116 and transmits the obtained accessory information request to the accessory unit 200-1.

(Step S5-1)

[0144] In the accessory unit 200-1, the communicator 202-1 receives the accessory information request trans-

mitted from the device 100. The controller 210-1 obtains the accessory information request received by the communicator 202-1. The controller 210-1 creates, on the basis of the obtained accessory information request, an accessory information response that includes information for identifying a function of the accessory unit 200-1 and whose destination is the device 100.

(Step S6-1)

[0145] In the accessory unit 200-1, the controller 210-1 outputs the created accessory information response to the communicator 202-1. The communicator 202-1 obtains the accessory information response output from the controller 210-1 and transmits the obtained accessory information response to the device 100.

(Step S7-1)

[0146] In the device 100, the communicator 115 receives the accessory information response transmitted from the accessory unit 200-1. The controller 116 obtains the accessory information response received by the communicator 115. The controller 116 performs, on the basis of the information for identifying the function of the accessory unit 200-1 included in the obtained accessory information response, a process for enabling the function of the accessory unit 200-1.

[0147] FIG. 10 is a diagram illustrating a second example of the operations performed by the system according to the present embodiment. Here, operations performed when an accessory unit 200-1 attached to the device 100 is removed from the device 100 will be described as an example.

(Step S1-2)

[0148] The accessory unit 200-1 is removed from the device 100.

(Step S2-2)

[0149] In the device 100, the sensor 112 detects the removal of the accessory unit 200-1 from the device 100. The sensor 112 detects that the accessory unit 200-1 is no longer electrically connected.

(Step S3-2)

[0150] In the device 100, the controller 116 stops, on the basis of a result of the detection of the removal of the accessory unit 200-1 from the device 100, the process for enabling the function of the accessory unit 200-1. More specifically, when the accessory unit 200 includes a puff sensor, the controller 116 stops (cancels) waiting in a state where a process for storing information indicating detection of a puff in the memory 114 of the device 100 can be performed. When the accessory unit 200 in-

cludes an audio unit, the controller 116 stops (cancels) waiting in a state where a process for outputting audio information under a certain condition can be performed. When the accessory unit 200 includes a heater, the controller 116 stops (cancels) waiting for an input of information (detection of a puff, pressing of a button, etc.) indicating a start of heating of the heater.

[0151] A process achieved by a certain function that can be achieved by a combination of accessory units is stopped. If there is an accessory unit 200 that has not been removed in this case, a process for performing a function achieved by the accessory unit 200 starts.

[0152] FIG. 11 is a diagram illustrating a third example of the operations performed by the system according to the present embodiment. Here, operations performed when an accessory unit 200-1 and an accessory unit 200-2 are attached to the device 100 will be described as an example. When a plurality of accessory units 200 are attached to the device 100, the controller 116 of the device 100 starts a process in accordance with a function of each of the accessory units 200 on the basis of the function.

(Step S1-3)

[0153] The accessory unit 200-1 and the accessory unit 200-2 are attached to the device 100.

(Step S2-3)

[0154] In the device 100, the sensor 112 detects the attachment of the accessory unit 200-1 to the device 100.

(Step S3-3)

[0155] In the device 100, the controller 116 creates an accessory information request for requesting information regarding the accessory unit 200-1 on the basis of a result of the detection of the attachment of the accessory unit 200-1 to the device 100.

(Step S4-3)

[0156] In the device 100, the controller 116 outputs the created accessory information request to the communicator 115. The communicator 115 obtains the accessory information request output from the controller 116 and transmits the obtained accessory information request to the accessory unit 200-1.

(Step S5-3)

[0157] In the accessory unit 200-1, the communicator 202-1 receives the accessory information request transmitted from the device 100. The controller 210-1 obtains the accessory information request received by the communicator 202-1. The controller 210-1 creates, on the basis of the obtained accessory information request, an

accessory information response that includes information for identifying a function of the accessory unit 200-1 and whose destination is the device 100.

5 (Step S6-3)

[0158] In the accessory unit 200-1, the controller 210-1 outputs the created accessory information response to the communicator 202-1. The communicator 202-1 obtains the accessory information response output from the controller 210-1 and transmits the obtained accessory information response to the device 100.

(Step S7-3)

[0159] In the device 100, the communicator 115 receives the accessory information response transmitted from the accessory unit 200-1. The controller 116 obtains the accessory information response received by the communicator 115. The controller 116 performs, on the basis of the information for identifying the function of the accessory unit 200-1 included in the obtained accessory information response, a process for enabling the function of the accessory unit 200-1.

25

(Step S8-3)

[0160] In the device 100, the sensor 112 detects the attachment of the accessory unit 200-2 to the device 100.

30

(Step S9-3)

[0161] In the device 100, the controller 116 creates an accessory information request for requesting information regarding the accessory unit 200-2 on the basis of a result of the detection of the attachment of the accessory unit 200-2 to the device 100.

35

(Step S10-3)

40

[0162] In the device 100, the controller 116 outputs the created accessory information request to the communicator 115. The communicator 115 obtains the accessory information request output from the controller 116 and transmits the obtained accessory information request to the accessory unit 200-2.

45

(Step S11-3)

50

[0163] In the accessory unit 200-2, the communicator 202-2 receives the accessory information request transmitted from the device 100. The controller 210-2 obtains the accessory information request received by the communicator 202-2. The controller 210-2 creates, on the basis of the obtained accessory information request, an accessory information response that includes information for identifying a function of the accessory unit 200-2 and whose destination is the device 100.

55

(Step S12-3)

[0164] In the accessory unit 200-2, the controller 210-2 outputs the created accessory information response to the communicator 202-2. The communicator 202-2 obtains the accessory information response output from the controller 210-2 and transmits the obtained accessory information response to the device 100.

(Step S13-3)

[0165] In the device 100, the communicator 115 receives the accessory information response transmitted from the accessory unit 200-2. The controller 116 obtains the accessory information response received by the communicator 115. The controller 116 performs, on the basis of the information for identifying the function of the accessory unit 200-2 included in the obtained accessory information response, a process for enabling the function of the accessory unit 200-2.

[0166] Although a process where two accessory units 200 are attached to the device 100 has been described with reference to FIG. 11, the number of accessory units 200 attached is not limited to this example. For example, the description also applies can also be applied to a process where three or more accessory units 200 are attached to the device 100.

[0167] FIG. 12 is a diagram illustrating a fourth example of the operations performed by the system according to the present embodiment. Here, operations performed when an accessory unit 200-1 and an accessory unit 200-2 attached to the device 100 are removed will be described as an example.

(Step S1-4)

[0168] The accessory unit 200-1 and the accessory unit 200-2 are removed from the device 100. The sensor 112 detects that the accessory unit 200-1 and the accessory unit 200-2 are no longer electrically connected.

(Step S2-4)

[0169] In the device 100, the sensor 112 detects the removal of the accessory unit 200-1 and the accessory unit 200-2 from the device 100.

(Step S3-4)

[0170] In the device 100, the controller 116 stops, on the basis of a result of the detection of the removal of the accessory unit 200-1 and the accessory unit 200-2 from the device 100, a process for enabling a function of the accessory unit 200-1 and a process for enabling a function of the accessory unit 200-2.

[0171] Although a process where two accessory units 200 are removed from the device 100 has been described with reference to FIG. 12, the number of accessory units

200 removed is not limited to this example. For example, the description also applies to a process where three or more accessory units 200 are removed from the device 100.

[0172] In the above-described embodiment, only one of an accessory unit 200-3, an accessory unit 200-4, and an accessory unit 200-5 that provides a smoking function for the device 100 may be connected to the device 100, instead. That is, among the accessory unit 200-3, the accessory unit 200-4, and the accessory unit 200-5 that provide the smoking function for the device 100, a plurality of accessory units 200 may not be connected to the device 100. The accessory unit 200-3, the accessory unit 200-4, or the accessory unit 200-5, however, may be connected to the device 100 along with the accessory unit 200-1 and/or the accessory unit 200-2.

[0173] Only combinations between an accessory unit 200 that provides a smoking function for the device 100, an accessory unit 200 that provides a function of collecting information for the device 100, and an accessory unit 200 that provides an operation function for the device 100 may be applicable, instead.

[0174] With the system 1 according to the present embodiment, the system 1 includes a device 100 including a power supply as a power supply 111 and a plurality of accessory units 200 that are removably attached to the device 100 and that provide functions for the device 100. In a case where the plurality of accessory units 200 are attached, the device 100 can perform the function provided by each of the plurality of accessory units 200. Since the device 100 can perform the function provided by each of the plurality of accessory units 200 with this configuration in a case where the plurality of accessory units 200 are attached, functions of the device 100 can be increased. The functions provided by the plurality of accessory units 200 for the device 100 may be different from each other or partly the same.

[0175] In addition, one of the plurality of accessory units 200 is a smoking function provision accessory unit that provides a smoking function. With this configuration, in a case where the accessory unit 200 is attached to the device 100, the accessory unit 200 can provide the smoking function for the device 100.

[0176] In addition, the smoking function provision accessory unit includes a heating heater for heating a stick or an atomization heater for atomizing a liquid. With this configuration, in a case where the accessory unit 200 is attached to the device 100, the accessory unit 200 can provide a smoking function of heating a stick or a smoking function of atomizing a liquid for the device 100.

[0177] In addition, one of the plurality of accessory units includes an information collection function provision accessory unit that provides a function of collecting information. With this configuration, in a case where the accessory unit 200 is attached, the accessory unit 200 can provide the function of collecting information for the device 100.

[0178] In addition, the information collection function

provision accessory unit includes a data collection sensor that collects various types of data. With this configuration, in a case where the accessory unit 200 is attached to the device 100, the accessory unit 200 can provide a function of collecting various types of data for the device 100 using the data collection sensor.

[0179] In addition, the data collection sensor includes at least one of a smoking data collection sensor capable of collecting smoking data, a biosensor capable of obtaining biological data, or a positional information collection sensor capable of collecting positional information. With this configuration, in a case where the accessory unit 200 is attached to the device 100, the accessory unit 200 can provide a function of collecting at least one of smoking data, biological data, or positional information for the device 100 using the data collection sensor.

[0180] In addition, one of the plurality of accessory units include an operation provision accessory unit that provides a certain operation. With this configuration, in a case where the accessory unit 200 is attached to the device 100, the accessory unit 200 can provide the certain operation for the device 100.

[0181] In addition, the operation provision accessory unit includes at least one of a function of generating a sound, a function of generating light, a function of generating a scent, a vibration function, or a display function. With this configuration, in a case where the accessory unit 200 is attached to the device 100, the accessory unit 200 can provide at least one of the function of generating a sound, the function of generating light, the function of generating a scent, the vibration function, or the display function for the device 100.

[0182] In addition, the device identifies, using attachment of at least one of the plurality of accessory units as a trigger, a function provided by the attached accessory unit and changes a processing mode of the device on a basis of the identified function. With this configuration, in a case where an accessory unit 200 is attached to the device 100, the device 100 can identify a function provided by the attached accessory unit 200 and change the mode thereof on the basis of the identified function. The device 100, therefore, can receive the provision of the function from the accessory unit 200.

[0183] With the system 1 according to the present embodiment, an accessory unit 200 is one of a plurality of accessory units 200 that provide functions for a device 100. In a case where the accessory unit 200 is attached to the device 100, the accessory unit 200 provides the corresponding function for the device 100. With this configuration, in a case where one of the plurality of accessory units 200 is attached to the device 100, the accessory unit 200 can provide the corresponding function for the device 100. Functions of the device 100, therefore, can be increased.

[0184] With the system 1 according to the present embodiment, a device 100 includes a power supply as a power supply 111 and a controller 116 that can perform a function provided by each of a plurality of accessory

units 200. In a case where the plurality of accessory units 200 are attached, the controller 116 can perform the function provided by each of the plurality of accessory units 200. Since the device 100 can perform the function provided by each of the plurality of accessory unit 200 with this configuration in a case where the plurality of accessory units 200 are attached to the device 100, functions of the device 100 can be increased.

10 (Modification of Embodiment)

[0185] FIG. 1 can be used for an example of a system 1 according to a modification of the embodiment. The system 1 according to the modification of the embodiment is different from the system 1 according to the embodiment in that an accessory unit having a communication function is included in addition to a plurality of accessory units 200 included in the system 1 according to the embodiment.

20 **[0186]** The accessory units 200 increase functions of the device 100 when attached to the device 100.

[0187] FIG. 13 is a diagram illustrating a configuration example of an accessory unit according to the modification of the embodiment. As illustrated in FIG. 13, an accessory unit 200-6 in this configuration example includes an electrode mechanism 201-6, a communicator 202-6, and a controller 210-6. An example of the accessory unit 200-6 may include an air inlet hole, an airflow path, and an air outlet hole. With this configuration, when attached to the device 100 along with an accessory unit 200 that provides a smoking function, the accessory unit 200-6 can let an aerosol (smoke) pass through the air inlet hole, the airflow path, and the air outlet hole.

35 **[0188]** When the accessory unit 200-6 is attached to the device 100 directly or through another accessory unit 200, the power supply 111 of the device 100 supplies power to the electrode mechanism 201-6 directly or through the other accessory unit 200. In the device 100, the power supply 111 supplies power to the components of the accessory unit 200-6 under control of the controller 116.

45 **[0189]** When the accessory unit 200-6 is attached to the device 100 directly or through another accessory unit 200 and yet another accessory unit 200 is attached to the device 100, the electrode mechanism 201-6 supplies power supplied from the power supply 111 of the device 100 directly or through the other accessory unit 200 to the yet other accessory unit 200. In the device 100, the power supply 111 supplies power to the components of the accessory unit 200-6 under control of the controller 116.

55 **[0190]** The communicator 202-6 is a communication interface capable of performing communication in accordance with any wireless communication standard. The communication standard may be, for example, Wi-Fi (registered trademark), Bluetooth (registered trademark), near-field communication, LPWA, or the like. The communicator 202-6 communicates with the device 100

bidirectionally. The communicator 202-6 receives an accessory information request transmitted from the device 100. The communicator 202-6 then transmits an accessory information response output from the controller 210-6 in response to the received accessory information request. The communicator 202-6 communicates with the terminal apparatus 130 bidirectionally.

[0191] The controller 210-6 functions as an arithmetic processing device and a control device and controls the whole operation of the accessory unit 200-6 in accordance with various programs. The controller 210-6 is achieved, for example, by an electronic circuit such as a CPU or a microprocessor. The controller 210-6 obtains an accessory information request received by the communicator 202-6. The controller 210-6 creates an accessory information response including information for identifying a function of the accessory unit 200-6 on the basis of the obtained accessory information request. The controller 210-6 outputs the created accessory information response to the communicator 202-6.

[0192] An example of the information for identifying the function of the accessory unit 200-6 is information for identifying a communication standard of a communication module included in the accessory unit 200-6.

[0193] The communication module of the accessory unit 200-6 starts a process for a communication connection with the terminal apparatus 130 such as a smartphone on the basis of the communication standard. The accessory unit 200-6 then performs a process for transmitting information stored in the memory 114 of the device 100 to the terminal apparatus 130 such as a smartphone through the communication connection.

(Example of Attachment of Accessory Unit)

[0194] FIG. 14 is a diagram schematically illustrating configuration examples of attachment of an accessory unit to the device according to the modification of the embodiment.

[0195] In an example illustrated in FIG. 14(1), an accessory unit 200-6 is attached to the device 100.

[0196] In a first example of this configuration example, near-field communication (NFC) is employed as an example of the communication standard of the communicator 202-6 of the accessory unit 200-6, and Bluetooth (registered trademark) is employed as an example of the communication standard of the communicator 202-6 of the device 100. With this configuration, since the accessory unit 200-6 need not perform pairing, the accessory unit 200-6 can be used for communication with another device, and the device 100 can be used for communication other than the communication with another device. For example, the accessory unit 200-6 can communicate with another device in a P2P (point-to-point) mode.

[0197] In a second example of this configuration example, LPWA is employed as an example of the communication standard of the communicator 202-6 of the accessory unit 200-6, and Bluetooth (registered trade-

mark) is employed as an example of the communication standard of the communicator 202-6 of the device 100. With this configuration, the accessory unit 200-6 can be used to transmit smoking data, biological data, or the like, and the device 100 can be used to receive a heating profile or software.

[0198] As illustrated in FIG. 14(2), two accessory units 200-6 are attached to the device 100.

[0199] In a first example of this configuration example, near-field communication (NFC) is employed as an example of the communication standard of the communicator 202-6 of one of the accessory units 200-6, and Bluetooth (registered trademark) is employed as an example of the communication standard of the other accessory unit 200-6.

[0200] In a second example of this configuration example, LPWA is employed as the communication standard of the communicator 202-6 of one of the accessory units 200-6, and Bluetooth (registered trademark) is employed as an example of the communication standard of the other accessory unit 200-6.

[0201] When a plurality of accessory units 200 are attached to the device 100, the controller 116 provides a certain function, if any, that can be achieved by a combination of the plurality of accessory units 200 for the device 100.

[0202] When distributed communication (e.g., when both a BLE module and an NFC module are attached) is provided for the device 100, the controller 116 in the device 100 starts distribution of transmission, by BLE or NFC, of information for transmission of data stored in the memory 114 on the basis of a fact that both the BLE module and the NFC module have been attached.

[0203] When an accessory unit 200-6 including a communication module and an accessory unit 200-1 including a puff sensor are attached to the device 100, the controller 116 in the device 100 starts a process for a communication connection with the terminal apparatus 130 such as a smartphone using the communication module. The controller 116 then performs a process for transmitting information stored in the memory 114 to the terminal apparatus 130 through the communication connection. The controller 116 also waits in a state where, when information indicating detection of a puff is received from the accessory unit 200-1 for the puff sensor, a process for storing the information indicating detection of a puff in the memory 114 of the device 100 can be performed. When information indicating detection of a puff is received from the accessory unit 200-1 thereafter, the controller 116 starts to store the information in the memory 114.

[0204] FIGs. 9 to 12 can be used for examples of operations performed by the system according to the modification of the embodiment, and description of the examples is omitted here.

[0205] In the above-described modification of the embodiment, the device 100 need not include the communicator 115. In this case, the device 100 may perform

communication using the attached accessory unit 200-6, instead.

[0206] With the system 1 according to the modification of the embodiment, an information collection function provision accessory unit includes a communication module that provides a communication function in addition to the system according to the embodiment. With this configuration, when attached to the device 100, the accessory unit 200 can provide the communication function for the device 100.

[0207] Each of the plurality of communication modules can perform communication using a different communication method. With this configuration, when attached to the device 100, a plurality of accessory units 200 can provide communication functions based on different communication methods.

[0208] Although embodiments have been described, these embodiments are presented as examples and not intended to limit the scope of the invention. These embodiments can be implemented in various other modes and subjected to various types of omission, replacement, modification, and combination without deviating from the spirit of the invention. These embodiments are included in the scope and the spirit of the invention, and also included in the invention described in the claims and its equivalent scope

[0209] The device 100 and the accessory units 200 described above may be achieved by a computer, instead. In this case, a program for achieving a function of each function block is stored in a computer-readable storage medium. The device 100 and the accessory units 200 may be achieved by loading the program stored in the storage medium into a computer system and executing the program using a CPU. The "computer system" here includes an OS (operating system) and hardware such as peripheral devices.

[0210] The "computer-readable storage medium" refers to a portable medium such as a flexible disk, a magneto-optical disk, a ROM, or a CD-ROM. The "computer-readable storage medium" also includes a storage device incorporated into a computer system, such as a hard disk.

[0211] Furthermore, the "computer-readable storage medium" may also include a storage medium that dynamically holds a program for a short period of time. The storage medium that dynamically holds a program for a short period of time is, for example, a communication line at a time when a program is transmitted over a network such as the Internet or a communication link such as a telephone line.

[0212] The "computer-readable storage medium" may also include a storage medium that holds a program for a certain period of time, such as a volatile memory inside a computer system that serves as a server or a client. The program may be used to achieve a part of the above-described functions. The program may be one that can achieve the above-described functions in combination with a program that is already stored in a computer system. The program may be achieved using a programmable

logic device, instead. The programmable logic device is, for example, an FPGA (field-programmable gate array).

5 Reference Signs List

[0213] 1...system, 100...device, 130...terminal apparatus, 200-1 to 200-n, 200...accessory unit, 110... power supply unit, 111...power supply, 112...sensor, 113...notifier, 114...memory, 115...communicator, 116...controller, 180A, 180B...airflow path, 181A, 181B...air inlet hole, 182A, 182B...air outlet hole, 224A, 224B...mouthpiece, 190A, 190B...arrow, 201-1, 201-2, 201-3, 201-4, 201-5...electrode mechanism, 202-1, 202-2, 202-3, 202-4, 202-5...communicator, 203-1...sensor, 204-2...notifier, 210-1, 210-2, 210-3, 210-4, 210-5...controller, 220-3, cartridge 220-4...cartridge, 221-3, 221-4, 221-5...heater, 222-3, 222-4...liquid guide, 223-3, 223-4...liquid storage, 230-4...flavor imparting cartridge 230-4, 231-4...flavor source, 240-5...holder, 241-5...internal space, 242-5... opening, 243-5... bottom, 244-5... heat insulator, 250-5... stick substrate, 251-5... substrate, 252-5... inhalation port

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Claims

1. A system comprising:

30 a device including a power supply; and
a plurality of accessory units that are removably attached to the device and that provide functions for the device,
wherein, the device configured to perform the functions provided by each of the plurality of accessory units in response to attachment of the plurality of accessory units.

40 2. The system according to claim 1,
wherein one of the plurality of accessory units is a smoking function provision accessory unit that provides a smoking function.

45 3. The system according to claim 2,
wherein the smoking function provision accessory unit includes a heating heater for heating a stick or an atomization heater for atomizing a liquid.

50 4. The system according to any of claims 1 to 3,
wherein one of the plurality of accessory units includes an information collection function provision accessory unit that provides a function of collecting information.

55 5. The system according to claim 4,
wherein the information collection function provision accessory unit includes a data collection sensor that collects various types of data.

6. The system according to claim 5,
wherein the data collection sensor includes at least
one of a smoking data collection sensor capable of
collecting smoking data, a biosensor capable of ob-
taining biological data, or a positional information col-
lection sensor capable of collecting positional infor-
mation. 5
7. The system according to any of claims 4 to 6,
wherein the information collection function provision
accessory unit includes a communication module
that provides a communication function. 10
8. The system according to claim 7,
wherein each of a plurality of the communication
modules is capable of performing communication
using a different communication method. 15
9. The system according to any of claims 1 to 3,
wherein one of the plurality of accessory units in-
cludes an operation provision accessory unit that
provides a certain operation. 20
10. The system according to claim 9,
wherein the operation provision accessory unit in-
cludes at least one of a function of generating a
sound, a function of generating light, a function of
generating a scent, a vibration function, or a display
function. 25
11. The system according to any of claims 1 to 9,
wherein the device identifies, using attachment of at
least one of the plurality of accessory units as a trig-
ger, a function provided by the attached accessory
unit and changes a processing mode of the device
on a basis of the identified function. 30
12. An accessory unit that is one of a plurality of acces-
sory units providing functions for a device,
wherein, in a case where the accessory unit is at-
tached to the device, the accessory unit provides the
corresponding function for the device. 35
13. A device comprising: 40
- a power supply; and 45
- a controller configured to perform functions pro-
vided by each of a plurality of accessory units,
wherein, the controller configured to perform the
functions provided by each of the plurality of ac-
cessory units in response to attachment of the
plurality of accessory units. 50
14. A control method performed by a system, the control
method comprising: 55
- a step of, using a device, detecting attachment
of a plurality of accessory units;

a step of, using the plurality of accessory units,
providing functions for the device; and
a step of, using the device, enabling the func-
tions provided by the plurality of accessory units.

15. A program for causing a computer of a device to
perform a process comprising:

a step of detecting attachment of a plurality of
accessory units; and
a step of enabling functions provided by the plu-
rality of accessory units, wherein
the information providing system includes an ac-
quisition unit that acquires information on a bea-
con signal received by a user terminal associat-
ed with the aerosol generation device from a
server included in a message exchange system
capable of transmitting a message to the user
terminal, a creation unit that creates aerosol
generation device-related information that is in-
formation related to the aerosol generation de-
vice provided to the user of the aerosol gener-
ation device on the basis of the information on
the beacon signal acquired by the acquisition
unit, and a communication unit that transmits
the aerosol generation device-related informa-
tion to the server.

FIG. 1

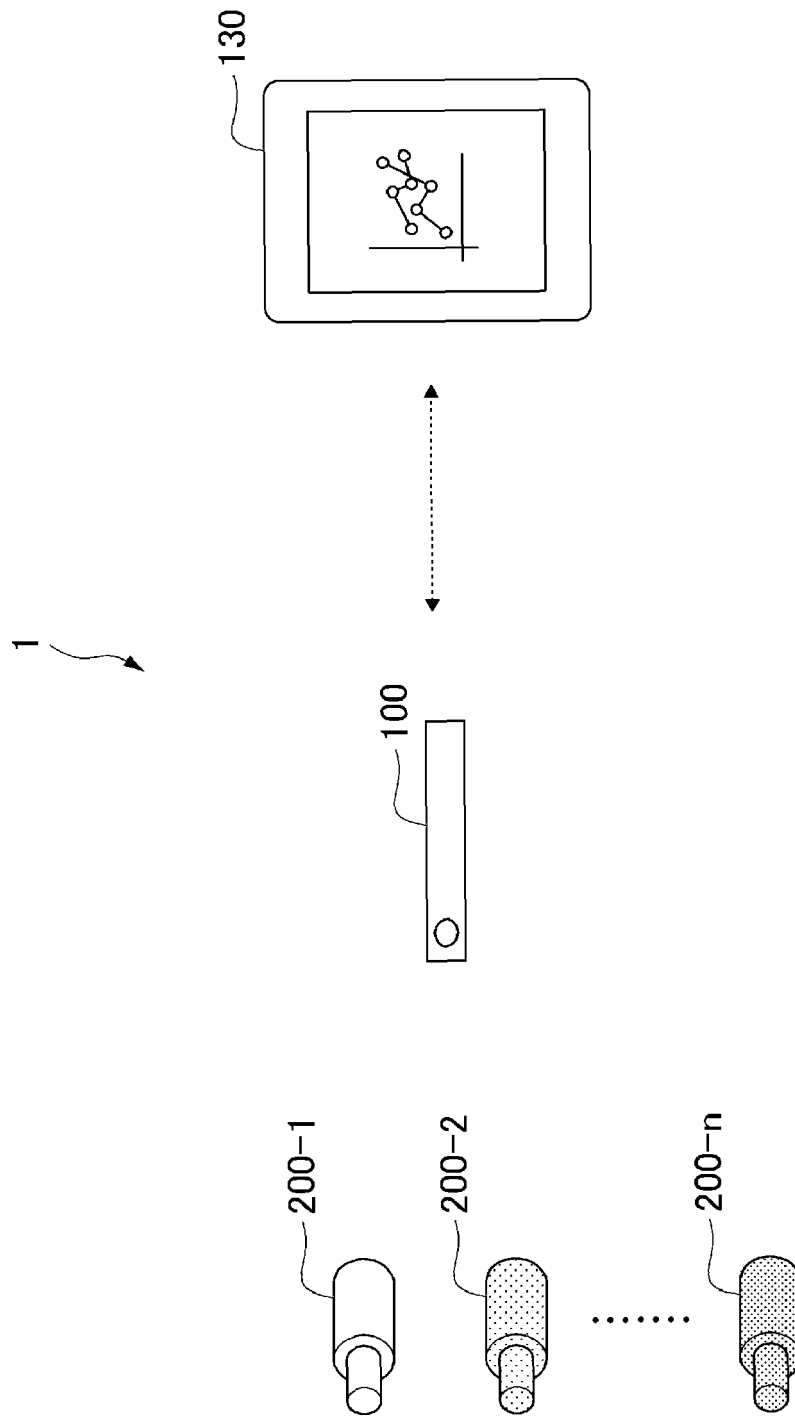


FIG. 2

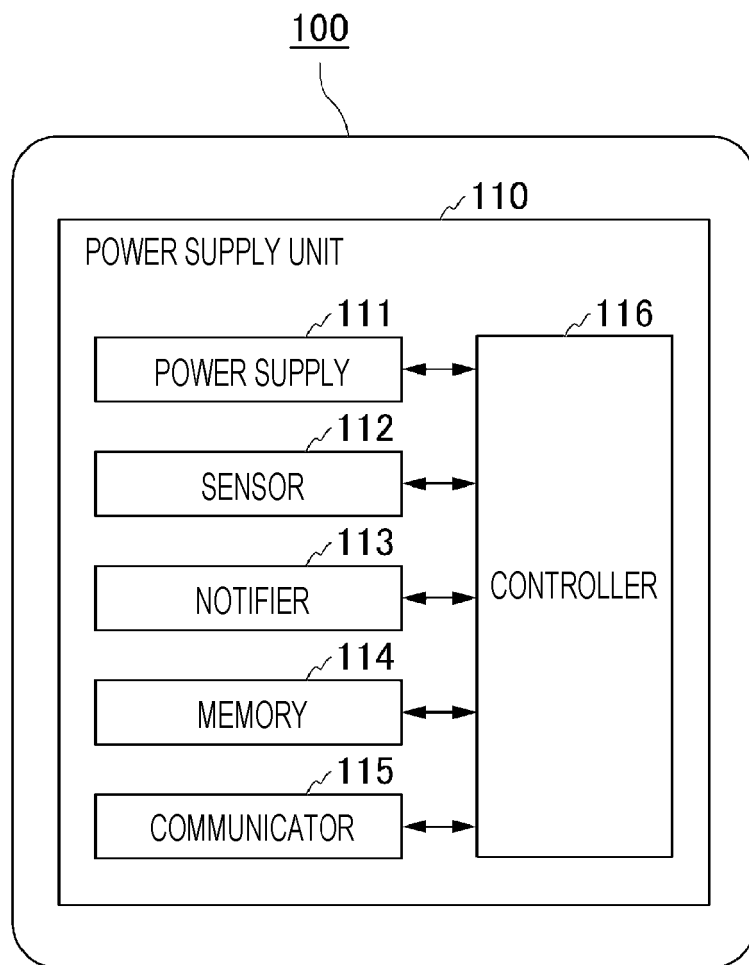


FIG. 3

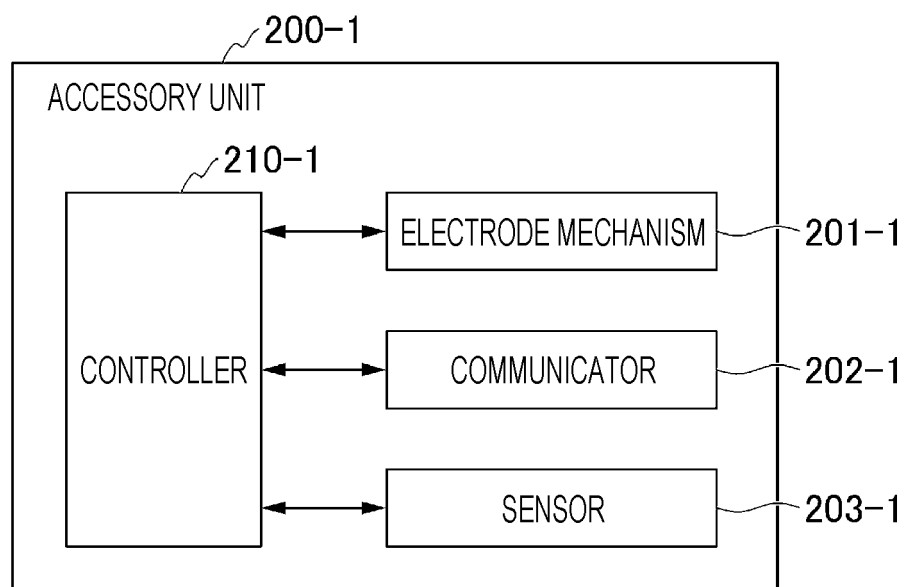


FIG. 4

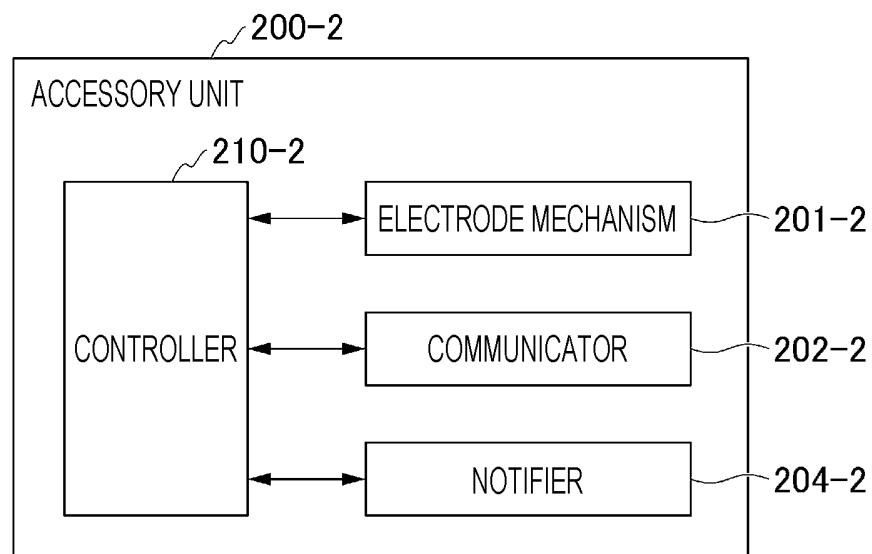


FIG. 5

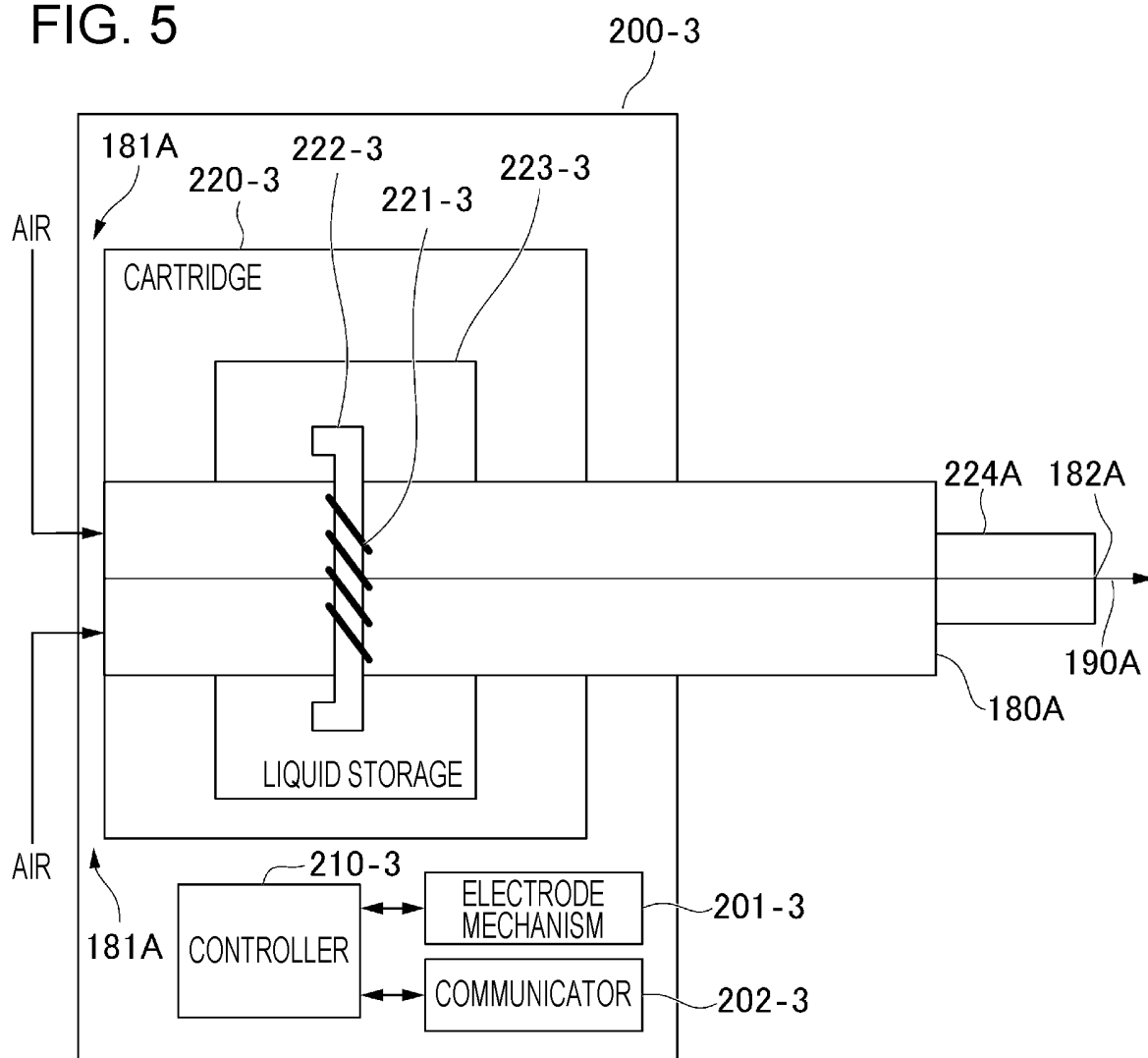


FIG. 6

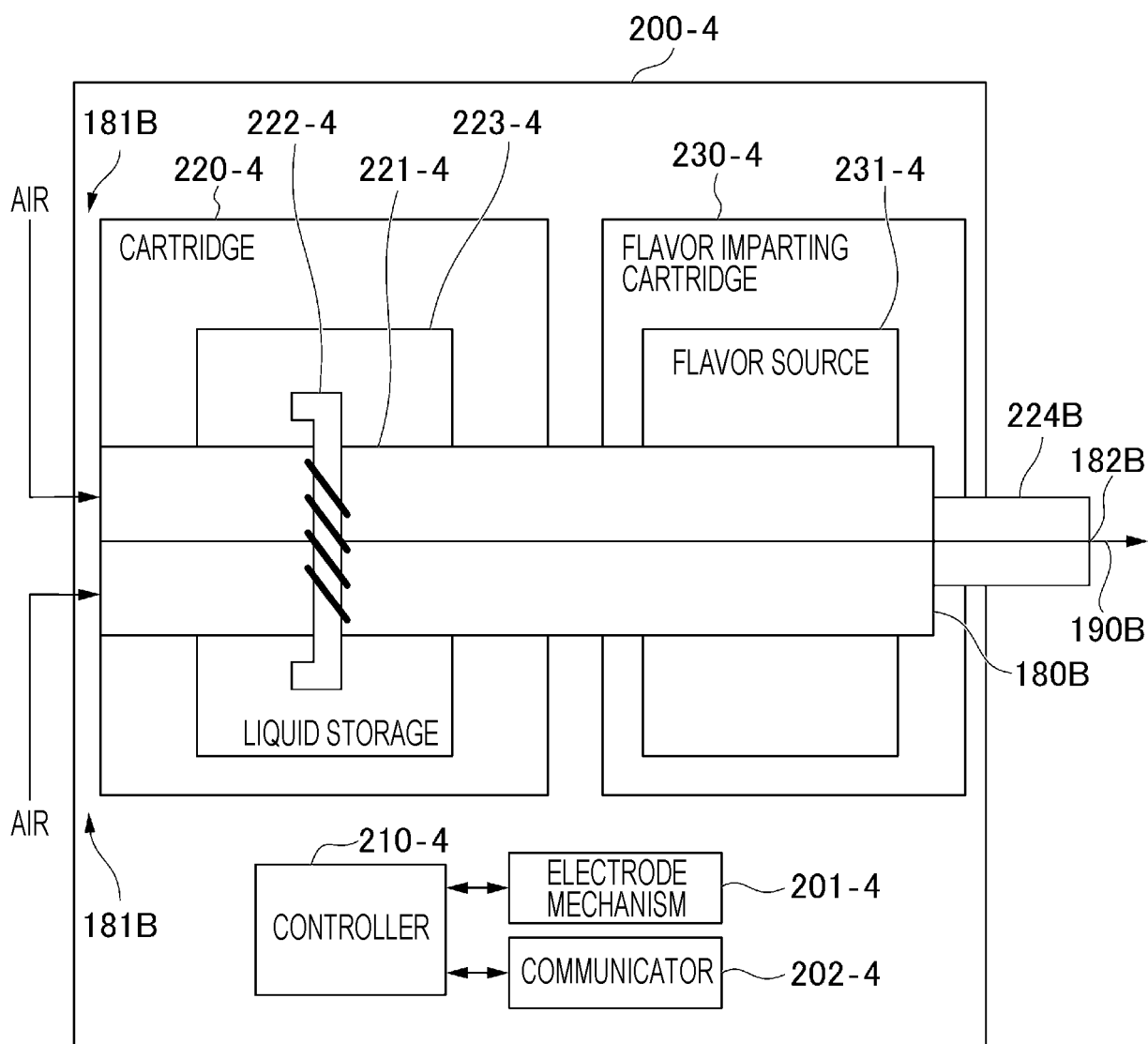


FIG. 7

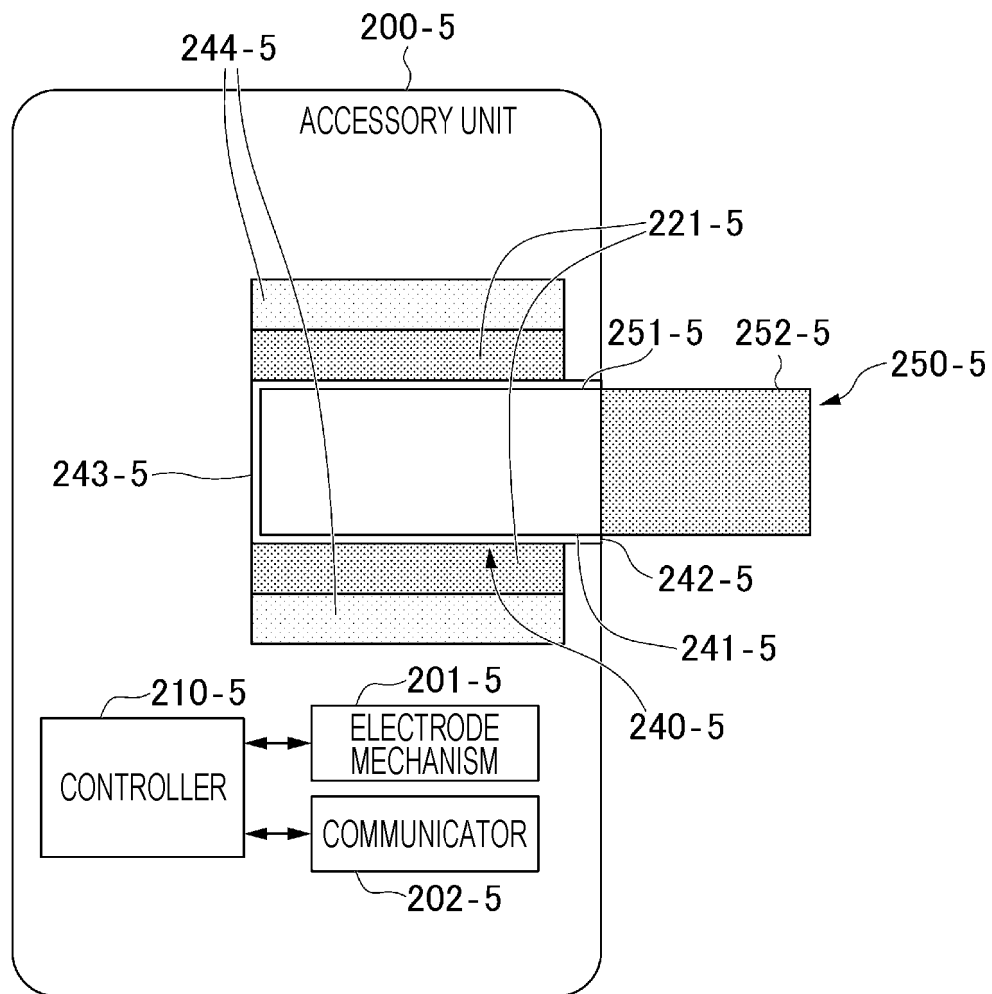


FIG. 8

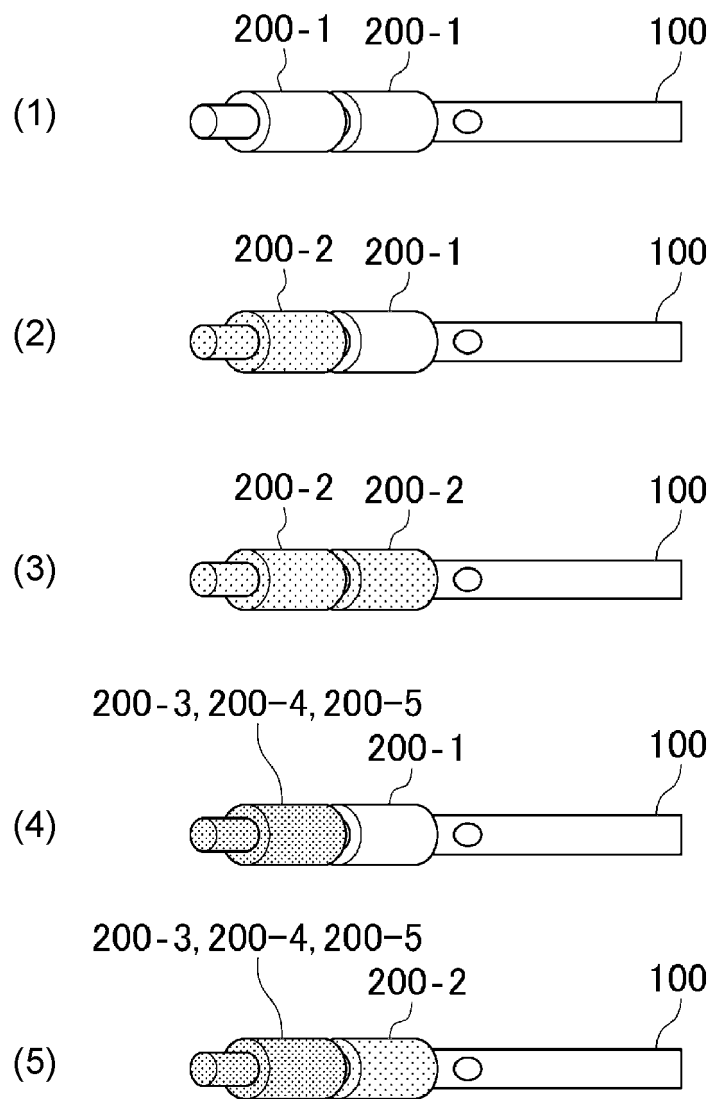


FIG. 9

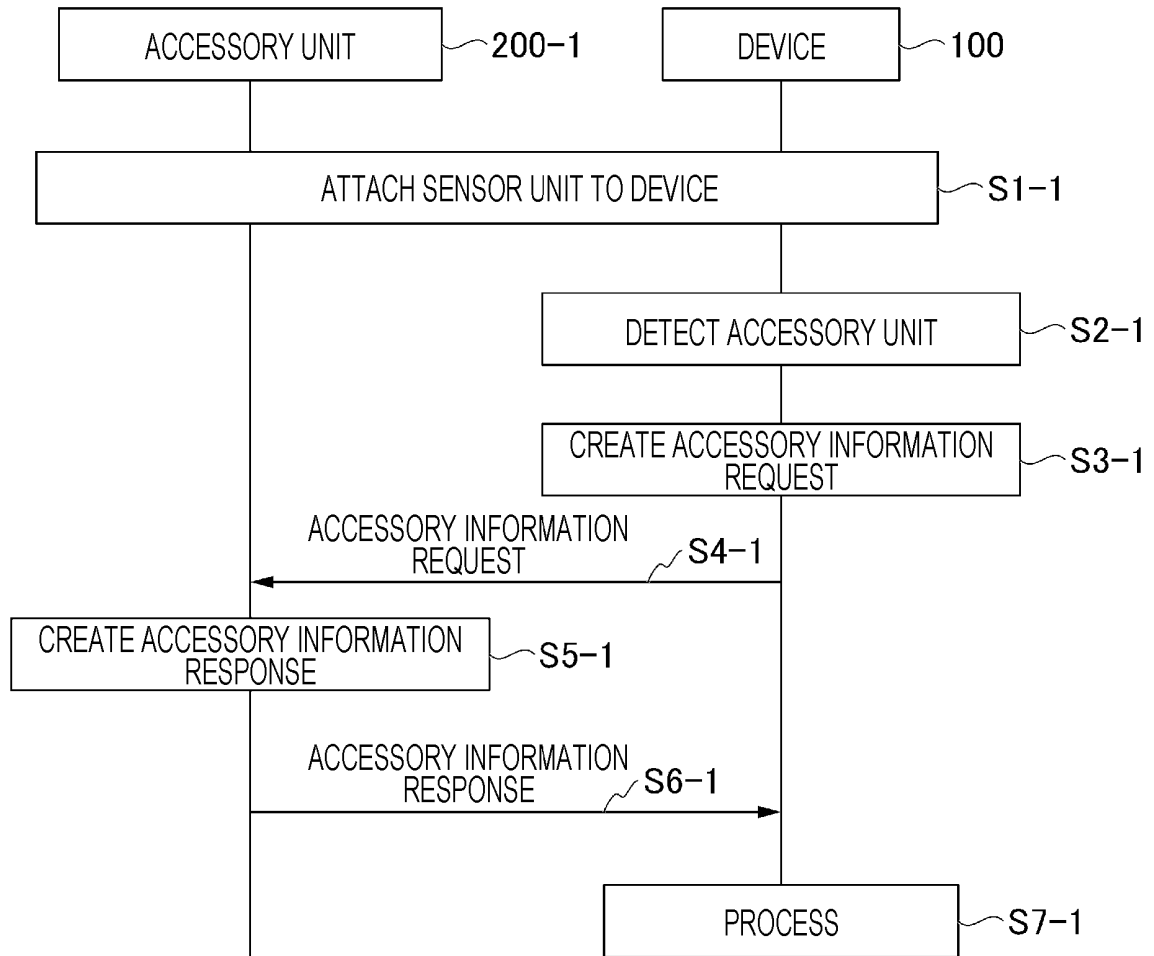


FIG. 10

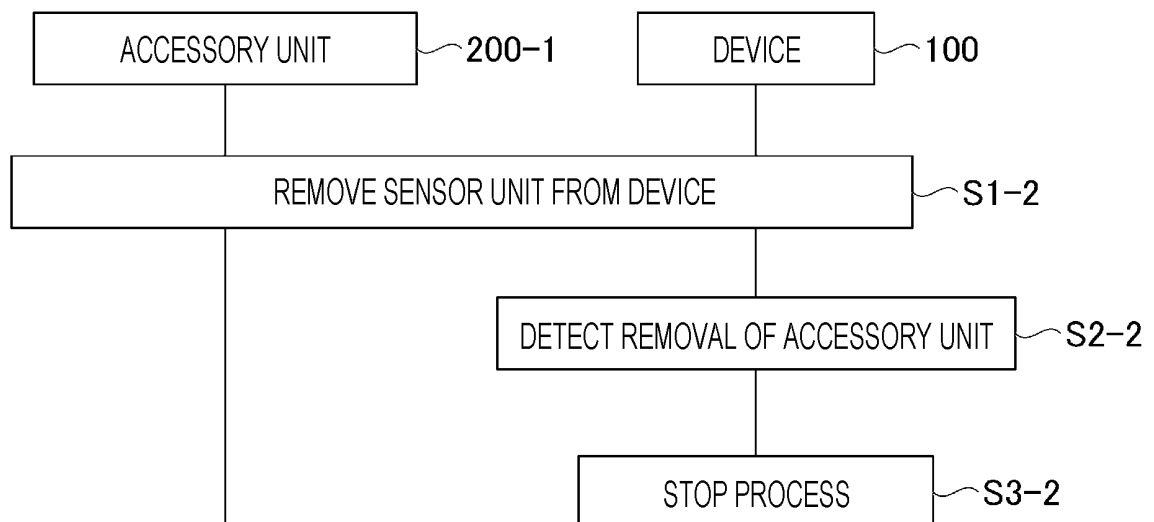


FIG. 11

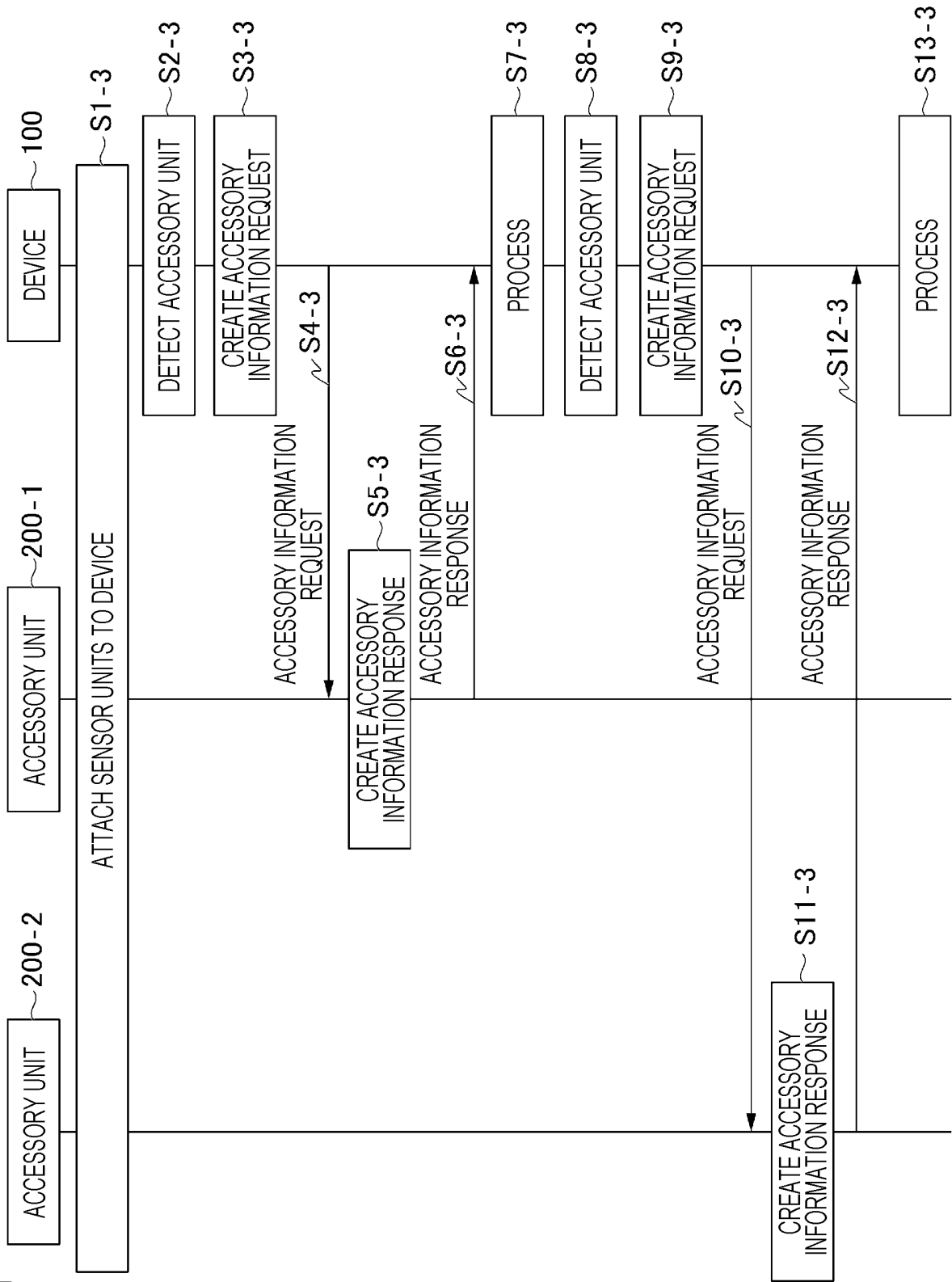


FIG. 12

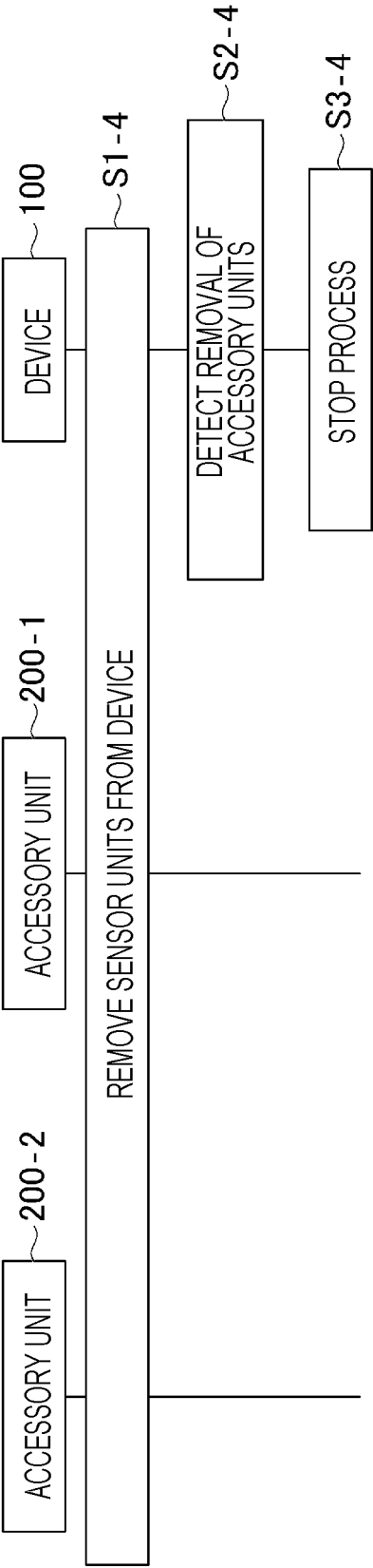


FIG. 13

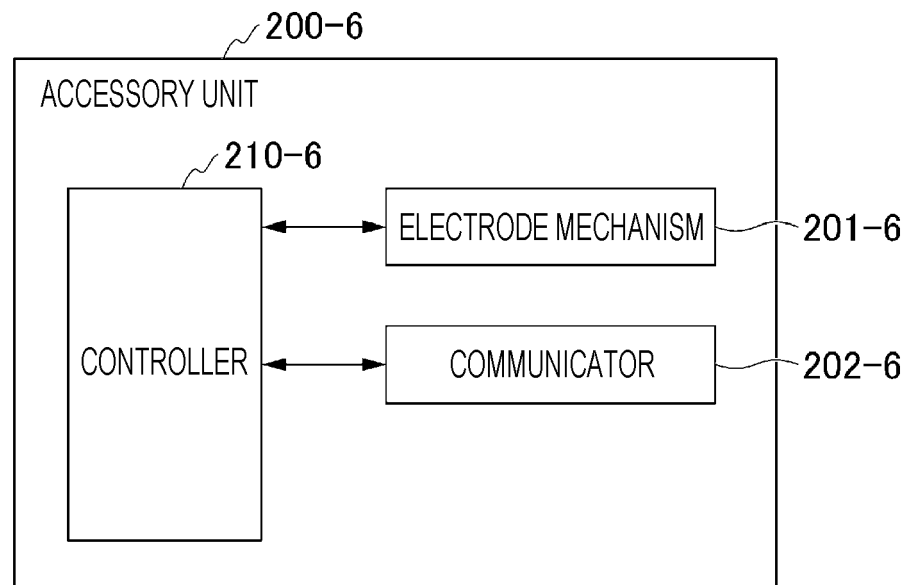
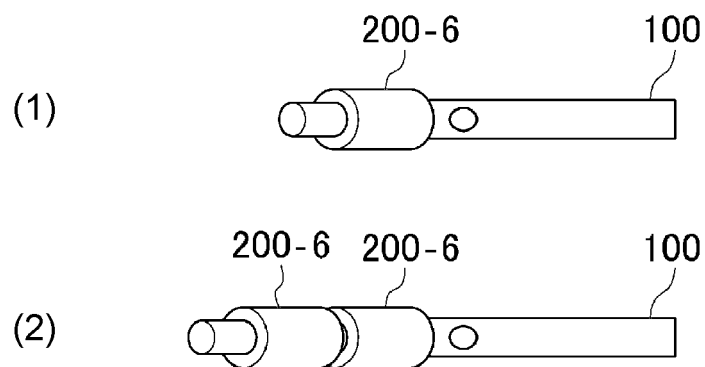


FIG. 14



5	INTERNATIONAL SEARCH REPORT		International application No. PCT/JP2020/041852												
10	A. CLASSIFICATION OF SUBJECT MATTER A24F 40/50 (2020.01) i FI: A24F40/50 According to International Patent Classification (IPC) or to both national classification and IPC														
15	B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) A24F40/50 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 1971-2021 Registered utility model specifications of Japan 1996-2021 Published registered utility model applications of Japan 1994-2021														
20	C. DOCUMENTS CONSIDERED TO BE RELEVANT <table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>X Y</td> <td>JP 2015-501575 A (THE BOEING CO.) 15 January 2015 (2015-01-15) paragraphs [0023]-[0024], [0030]-[0042], fig. 3, 5</td> <td>1, 4-5, 7-15 6</td> </tr> <tr> <td>X Y</td> <td>JP 2017-512459 A (RAI STRATEGIC HOLDINGS, INC.) 25 May 2017 (2017-05-25) paragraphs [0070]-[0115], fig. 2-3, 5</td> <td>1-5, 7, 9-15 6</td> </tr> <tr> <td>Y</td> <td>JP 2020-513851 A (CANOPY GROWTH CORPORATION) 21 May 2020 (2020-05-21) paragraphs [0053]-[0057], fig. 1-2</td> <td>6</td> </tr> </tbody> </table>			Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X Y	JP 2015-501575 A (THE BOEING CO.) 15 January 2015 (2015-01-15) paragraphs [0023]-[0024], [0030]-[0042], fig. 3, 5	1, 4-5, 7-15 6	X Y	JP 2017-512459 A (RAI STRATEGIC HOLDINGS, INC.) 25 May 2017 (2017-05-25) paragraphs [0070]-[0115], fig. 2-3, 5	1-5, 7, 9-15 6	Y	JP 2020-513851 A (CANOPY GROWTH CORPORATION) 21 May 2020 (2020-05-21) paragraphs [0053]-[0057], fig. 1-2	6
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X Y	JP 2015-501575 A (THE BOEING CO.) 15 January 2015 (2015-01-15) paragraphs [0023]-[0024], [0030]-[0042], fig. 3, 5	1, 4-5, 7-15 6													
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35	☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.														
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50	Date of the actual completion of the international search 08 January 2021 (08.01.2021)		Date of mailing of the international search report 19 January 2021 (19.01.2021)												
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Information on patent family members

International application no.

PCT/JP2020/041852

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