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COOK TOP, RANGE HOOD AND CONTROL METHODS THEREOF

Abstract

A cook top includes an inputter configured to receive input of a user manipulation, and a cooker configured to heat a cooking device placed on the cook top. A communicator is configured to perform communication with a user terminal device and a range hood. A processor is configured to: control an operating state of the cooker according to the user manipulation, transmit a signal for controlling an operating state of the range hood to correspond to the operating state of the cooker to the range hood, and control the communicator to transmit state information of the cook top that includes information of the operating state of the cooker to the user terminal device.

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Background/Summary

CROSS-REFERENCE TO RELATED APPLICATIONS [0001] This application is a continuation of application Ser. No. 18/304,210, filed Apr. 20, 2023, which is a continuation of application Ser. No. 16/817,479, filed Mar. 12, 2020, now U.S. Pat. No. 11,668,472, which is a divisional of application Ser. No. 15/645,930, filed Jul. 10, 2017, now U.S. Pat. No. 10,670,278, which claims priority from Korean Patent Application No. 10-2016-0116458, filed on Sep. 9, 2016, in the Korean Intellectual Property Office, the disclosures of which are incorporated herein by reference in their entirety.

BACKGROUND
1. Field
[0002] Apparatuses and methods consistent with the present disclosure relate to a cook top, a range hood and a control method thereof, and more particularly, to a cook top and a range hood that are capable of performing wireless communication between each other, and a control method thereof.
2. Description of Related Art
[0003] Recently, the Internet of things (IoT) technology has enabled various electronic products, such as home appliance products and electronic devices, to share information via networks.
[0004] A cook top generally refers to an electric range or gas range having a plurality of burners to heat cooking containers or food to be cooked. A range hood refers to a ventilating device for exhausting through an exhaust fan smoke or odors generated from the cook top. A range hood is typically installed together with a cook top.
[0005] However, until now, there have been no attempts to combine IoT technology with a cook top, a range hood, and a user terminal device for controlling the cook top and the range hood. Thus, there is a need for a technology that could enable a user to check and control the operating state of the cook top and the range hood through the user terminal device.
SUMMARY
[0006] To address the above-discussed deficiencies, it is an object to provide a cook top and a range hood that allow a user to remotely check and control the operating states thereof, and a control method thereof.
[0007] According to an embodiment of the present disclosure, there is provided a cook top including an inputter; a cooker configured to heat a cooking device placed on the cook top; a communicator configured to perform communication with a user terminal device and a range hood; and a processor configured to receive input of a user manipulation through the inputter, control an operating state of the cooker according to the user manipulation, transmit a signal for controlling an operating state of the range hood to correspond to the operating state of the cooker to the range hood, and control the communicator to transmit state information of the cook top that includes information of the operating state of the cooker to the user terminal device.
[0008] Here, the processor may transmit a signal for operating the range hood when the cooker is operated and for stopping the range hood from operating when the cooker is stopped from operating, to the range hood.

[0009] Further, the communicator may include a first communicator that includes a Bluetooth module configured to perform communication with the range hood in a Bluetooth method; and a second communicator that includes a Wi-Fi module configured to perform communication with the user terminal device in a Wi-Fi method.

[0010] Further, the state information of the cook top may include at least one of whether or not the cooker is being operated, operating state information of each of a plurality of burners included in the cooker, fire power level and timer information.

[0011] Further, in response to receiving state information of the range hood from the range hood, the processor may process the received state information and transmit the same to the user terminal device.

[0012] Further, in response to receiving a control command for controlling the range hood from the user terminal device, the processor may transmit a signal for operating the range hood according to the control command, to the range hood.

[0013] Further, the processor may receive timer setting information from the user terminal device, and transmit information of the time left until a timer ends as time elapses and a signal notifying that the timer ended based on the received timer setting information, to the user terminal device.

[0014] Further, the cooker may include a plurality of burners configured to convert electric energy into thermal energy to generate heat; and an upper plate provided at an upper side of the burner to transmit heat to the cooking device, and the Bluetooth module and the Wi-Fi module may be spaced apart from each other and be installed on different surfaces on a main body of the cook top to reduce or minimize signal interference.

[0015] Further, the Bluetooth module may be included in an inner space formed as a first holder including at least one groove and a second holder including a projection corresponding to the groove are geared to each other.

[0016] Further, the Wi-Fi module may be included in an inner space formed as a first holder including at least one groove and a second holder including a projection corresponding to the groove are geared to each other, and thus may have a structure that is separable from the cook top, and the second holder may include a stumbling block configured to seat the Wi-Fi module and a mis-assembly prevention block.

[0017] Meanwhile, according to another embodiment of the present disclosure, there is provided a control method of a cook top, the method including receiving input of a user manipulation; controlling an operating state of a cooker for heating a cooking device placed on the cook top, according to the user manipulation; and transmitting a signal for controlling an operating state of the range hood to correspond to the operating state of the cooker to the range hood, and transmitting state information of the cook top that includes information of the operating state of the cooker to a user terminal device configured to perform communication with the cook top.

[0018] Here, the transmitting comprises transmitting to the range hood a signal for operating the range hood when the cooker is operated, and for stopping the range hood from operating when the cooker is stopped from operating.

[0019] Further, the cook top may perform communication with the range hood in a Bluetooth method, and perform communication with the user terminal device in a Wi-Fi method.

[0020] Further, the state information of the cook top may include at least one of whether or not the cooker is being operated, operating state information of each of a plurality of burners included in the cooker, fire power level and timer information.

[0021] Further, the method may further include receiving a control command for controlling the range hood from the user terminal device; and transmitting a signal for operating the range hood according to the control command, to the range hood.

[0022] Meanwhile, according to another embodiment of the present disclosure, there is provided a range hood including an exhaust fan configured to discharge indoor air to outdoors through an exhaust pipe; a communicator configured to perform communication with a cook top; and a

processor configured to, in response to receiving a signal for controlling an operating state of the exhaust fan to correspond to an operating state of the cook top from the cook top, control the operating state of the exhaust fan to correspond to the operating state of the cook top based on the received signal, and control the communicator to transmit state information of the range hood to the cook top.

[0023] Here, the processor may control the exhaust fan to operate in response to receiving from the cook top a signal notifying that the cook top is being operated, and control the exhaust fan to stop operating in response to receiving from the cook top a signal notifying that the cook top is stopped from operating.

[0024] Further, the range hood may further include an inputter; and a display, wherein the processor may perform pairing with the cook top in response to receiving a pairing command input through the inputter, and display an indicator configured to notify through the display that it is in a paired state with the cook top when the pairing with the cook top is completed.

[0025] Further, the range hood may further include a light, wherein state information of the range hood may include information of operating states of the exhaust fan and the light.

[0026] Further, the communicator may include a Bluetooth module configured to perform communication with the cook top in a Bluetooth method, and the Bluetooth module may be disposed at an end of a lower portion of the inputter and the display so that it does not overlap with the inputter and the display.

[0027] Meanwhile, according to an embodiment of the present disclosure, there is provided a control method of a range hood, the method including receiving a signal for controlling an operating state of an exhaust fan provided in the range hood to correspond to an operating state of the cook top, from a cook top; in response to receiving the signal, controlling an operating state of the exhaust fan to correspond to the operating state of the cook top based on the received signal; and transmitting state information of the range hood to the cook top.

[0028] Here, the controlling the operating state may operate the exhaust fan in response to receiving from the cook top a signal notifying that the cook top is being operated, and stops the exhaust fan from operating in response to receiving from the cook top a signal notifying that the cook top is stopped from operating.

[0029] Further, the control method may further include performing pairing with the cook top as a pairing command is input; and providing an indicator notifying that it is in a paired state when the pairing with the cook top is completed.

[0030] Meanwhile, according to another embodiment of the present disclosure, there is provided a cooking system including a cook top, a range hood and a user terminal device, the system including the cook top configured to transmit a signal for operating an exhaust fan provided in the range hood when the cook top is being operated according to a user manipulation to the range hood paired with the cook top, and transmit state information of the cook top to the user terminal device; the range hood configured to operate the exhaust fan and transmit state information of the range hood in response to receiving the signal from the cook top, to the cook top; and a user terminal device configured to receive the state information of the cook top and the state information of the range hood from the cook top, and transmit a control command for controlling the cook top and the range hood to the cook top.

[0031] Here, the cook top may transmit a signal for stopping the exhaust fan from operating when the cook top is stopped from operating, to the range hood.

[0032] Further, the range hood and the cook top may perform communication in a Bluetooth method, and the user terminal device and the cook top may perform communication in a Wi-Fi method.

[0033] Further, in response to receiving state information of the range hood from the range hood, the cook top may process the received state information and transmit the same to the user terminal device.

[0034] Further, in response to receiving a control command for controlling the range hood from the user terminal device, the cook top may transmit to the range hood a signal for operating the range hood according to the control command.

[0035] According to the various embodiments of the present disclosure, the user may check the operating states of the cook top and the hood and control their operations more conveniently.

[0036] Before undertaking the DETAILED DESCRIPTION below, it may be advantageous to set forth definitions of certain words and phrases used throughout this patent document: the terms "include" and "comprise," as well as derivatives thereof, mean inclusion without limitation; the term "or," is inclusive, meaning and/or; the phrases "associated with" and "associated therewith," as well as derivatives thereof, may mean to include, be included within, interconnect with, contain, be contained within, connect to or with, couple to or with, be communicable with, cooperate with, interleave, juxtapose, be proximate to, be bound to or with, have, have a property of, or the like; and the term "controller" means any device, system or part thereof that controls at least one operation, such a device may be implemented in hardware, firmware or software, or some combination of at least two of the same. It should be noted that the functionality associated with any particular controller may be centralized or distributed, whether locally or remotely. Definitions for certain words and phrases are provided throughout this patent document, those of ordinary skill in the art should understand that in many, if not most instances, such definitions apply to prior, as well as future uses of such defined words and phrases.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

[0037] For a more complete understanding of the present disclosure and its advantages, reference is now made to the following description taken in conjunction with the accompanying drawings, in which like reference numerals represent like parts:

[0038] FIG. **1** is a view provided to explain a cooking system, according to an embodiment of the present disclosure;

[0039] FIG. **2** is a block diagram schematically illustrating a configuration of a cook top, according to an embodiment of the present disclosure;

[0040] FIG. **3** is a block diagram schematically illustrating a configuration of a range hood, according to an embodiment of the present disclosure;

[0041] FIG. **4** is a view provided to explain a data conversion processing procedure of the cook top, according to an embodiment of the present disclosure;

[0042] FIG. **5** is a view provided to explain a pairing process of the cook top and the range hood, according to an embodiment of the present disclosure;

[0043] FIG. **6** is a view provided to explain a structure of the cook top, according to an embodiment of the present disclosure;

[0044] FIGS. **7**A and **7**B are views provided to explain a structure of a Bluetooth module provided in the cook top, according to an embodiment of the present disclosure;

[0045] FIGS. **8**A-**8**C are views provided to explain a structure of a Wi-Fi module provided in the cook top, according to an embodiment of the present disclosure;

[0046] FIGS. **9** and **10** are views provided to explain a structure of the range hood, according to an embodiment of the present disclosure;

[0047] FIGS. **11**A-**11**D are views illustrating a cook top control UI of a user terminal device, according to an embodiment of the present disclosure;

[0048] FIGS. **12** and **13** are views illustrating a range hood control UI of the user terminal device, according to an embodiment of the present disclosure;

[0049] FIG. **14** is a block diagram illustrating in detail a configuration of a cook top, according to

another embodiment of the present disclosure;

[0050] FIG. **15** is a block diagram illustrating in detail a configuration of a range hood, according to another embodiment of the present disclosure;

[0051] FIG. **16** is a flowchart provided to explain a control method of the cook top, according to an embodiment of the present disclosure; and

[0052] FIG. **17** is a flowchart provided to explain a control method of the range hood, according to an embodiment of the present disclosure.

DETAILED DESCRIPTION

[0053] FIGS. **1** through **17**, discussed below, and the various embodiments used to describe the principles of the present disclosure in this patent document are by way of illustration only and should not be construed in any way to limit the scope of the disclosure. Those skilled in the art will understand that the principles of the present disclosure may be implemented in any suitably arranged electronic device.

[0054] Prior to explaining the present disclosure in detail, explanation will be made on the method by which the present specification and drawings are disclosed.

[0055] The terms used in the present specification and the claims are general terms selected in consideration of the functions of the various embodiments of the present disclosure. However, these terms may vary depending on the intention, legal or technical interpretation, and emergence of new technologies and the like of those skilled in the related art. Further, some of the terms may be ones arbitrarily selected by the applicant. Unless there is a specific definition of a term, the term may be construed as defined in the present specification, and based on the overall contents and technological common sense of those skilled in the related art.

[0056] Further, like reference numerals indicate like components that perform substantially the same functions throughout the specification. For the sake of convenience of explanation and understanding, different embodiments are described with reference to like reference numerals. That is, even if all the components in the plurality of drawings have like reference numerals, it does not mean that the plurality of drawings refer to only one embodiment.

[0057] Further, the terms including numerical expressions such as a first, a second and the like may be used to explain various components, but there is no limitation thereto. These terms are used only for the purpose of differentiating one component from others, without limitation thereto. For example, a numerical expression combined with a component should not limit the order of use or order of arrangement of the component. When necessary, the numerical expressions may be exchanged between components.

[0058] In the present specification, a singular expression includes a plural expression unless clearly mentioned otherwise. In this specification, terms such as "include/including" and "have/has" should be construed as designating that there are such characteristics, numbers, steps, operations, elements, components or a combination thereof in the specification, not to exclude the presence or possibility of adding one or more of other characteristics, numbers, steps, operations, elements, components or a combination thereof.

[0059] In the embodiments of the present disclosure, terms such as "module", "unit", "part" and the like are terms used to indicate components that may be integrated into at least one module or chip and realized as at least one processor (not illustrated), except when each of them needs to be realized as certain hardware.

[0060] Further, in the embodiments of the present disclosure, when it is described that a portion is connected to another portion, the portion may be either connected directly to the other portion, or connected indirectly via another medium. Further, when it is described that a portion includes another component, it does not exclude the possibility of including other components, that is, the portion may further include other components besides the described component, unless specifically disclosed to the contrary.

[0061] Hereinafter, the present disclosure will be explained in detail with reference to the drawings

attached.

[0062] FIG. **1** is a view provided to explain a cooking system, according to an embodiment of the present disclosure.

[0063] The cooking system **1000** includes a cook top **100**, a range hood **200**, and a user terminal device **300**.

[0064] The cook top **100** is a cooking device configured to generate heat using gas or electricity, and that has one or more burners to heat food to be cooked or cooking containers placed on top of the burners. The cook top **100** may be called a gas range or an electric range depending on the method of generating heat.

[0065] Especially, in the case where the cook top **100** is realized as an electric range configured to generate heat by converting electric energy into thermal energy, such cook tops may be classified into inductions, hot plates, highlights and the like depending on the heating element. Inductions use the principle where heat is generated by an inductance action as a cooking container contacts a magnetic substance, and thus they are electric ranges that use exclusive containers having magnetic properties. Hot plates use a method of directly heating a metal plate having heat wires, and highlights use a method where heat wires are distributed in a circular form to heat a ceramic heater. In other words, highlights use a compromised method of a hot plate and an induction. However, the electric ranges are not limited to the aforementioned methods.

[0066] The range hood **200** is a ventilating device configured to discharge or purify smoke or smell generated from food being cooked in the cook top **100** through an exhaust pipe that connects a main body of the range hood **200** and outdoors. The range hood **200** is mostly arranged above the cook top **10**. The range hood **200** inhales the smoke or smell using suction force generated by an exhaust fan that is supplied with power source and rotates by the received power source, and then exhausts to the outdoors the smoke or smell from which foreign matter has been filtered by a filter.

[0067] The user terminal device **300** is a device capable of communicating with the cook top **100**, and may be realized as various electronic devices such as, for example, smart phone, tablet PC, notebook PC, remote control, wearable device and the like.

[0068] The cook top **100** and the user terminal device **300** may be connected to each other via wireless communication and transceive data between each other. FIG. **1** illustrates that the user terminal device **300** is connected to the cook top **100** to transceive data, and that the cook top **100** and the range hood **200** are connected to transceive data, but it is also possible to have the user terminal device **300** directly connected to the range hood **200** to transceive data therebetween.

[0069] Here, the user terminal device **300** may transmit to the cook top **100** a control signal for controlling the cook top **100** or the range hood **200**, and the cook top **100** may transmit to the user terminal device **300** operating information of the cook top **100** and operating information of the range hood **200**. Further, the cook top **100** may transmit to the range hood **200** a signal notifying the operation of the cook top **100**, a signal for controlling the range hood **200** according to a control signal received from the user terminal device **300**, and operating information of the range hood **200** to the cook top **100**.

[0070] Meanwhile, FIG. **1** illustrates an embodiment where the user terminal device **300** is connected to the cook top **100** to transceive data, but it is obvious that the user terminal device **300** may be connected to the range hood **200** to transceive data directly without going through the cook top **100**.

[0071] FIG. **2** is a block diagram schematically illustrating a configuration of the cool top, according to an embodiment of the present disclosure.

[0072] Referring to FIG. **2**, the cook top **100** includes an inputter **110**, a cooker **120**, a communicator **130** and a processor **140**.

[0073] The inputter **110** is configured to receive input for manipulating operations of the cook top **100** from the user. The inputter **110** may be provided with a power source key for supplying power source to the cook top **100** and level keys configured to manipulate fire power (output) of at least

one burner included in the cooker **120**, a communication key (pairing key) configured to perform communication with the range hood **200** and a key configured to input various control commands regarding cooking. Here, the inputter **110** may adopt a button-type switch, a membrane switch, a dial and the like.

[0074] The cooker **120** is a configuration for performing heating a cooking device disposed on an upper portion of a main body of the cook top **100** to perform cooking. In the case where the cook top **100** is realized as an electric range, the cooker **120** may include a burner (not illustrated) configured to convert electric energy into thermal energy to generate heat, a radiator (not illustrated) that surrounds the burner in order to prevent the heat generated from the burner from being transmitted to other components mounted on the cook top **100**, and an upper plate (not illustrated) provided on an upper side of the burner to directly transmit heat to the cooking device. In the burner, an inductance heating coil may be used, that generates heat when an alternating current is conducted. Here, the cooker **120** may include at least one or more burners, that is, a plurality of burners of preferably 3, 4 or 5. Here, the plurality of burners may be formed in different sizes or different shapes from one another so that various forms of cooking devices may be heated.

[0075] The communicator **130** may perform communication with the range hood **200** and the user terminal device **300** in a wireless communication method. Here, the wireless communication method may be at least one of NFC, Wi-Fi, Wi-Fi Direct and Bluetooth.

[0076] The communicator **130** according to an embodiment of the present disclosure may include a first communicator **131** that performs communication with the range hood **200** and a second communicator **132** that performs communication with the user terminal device **300**. Here, the first communicator **131** may perform communication through a first communication method and the second communicator **132** may perform communication through a second communication method, and the first communication method and the second communication method may be different from each other. According to an embodiment of the present disclosure, the first communicator **131** may include a Bluetooth module to perform communication with the range hood **200** through Bluetooth, and the second communicator **132** may include a Wi-Fi module to perform communication with the user terminal device **300** through Wi-Fi.

[0077] The first communicator **131** may perform pairing with the range hood **200** in a Bluetooth method. Specifically, in response to receiving a connection request from the range hood **200**, the first communicator **131** may transmit a unique address, device name and other information of the cook top **100** to the range hood **200**. Further, the first communicator **131** may receive unique address, device name and other information of the range hood **200**. By providing and receiving connection information in such a way, the cook top **100** and the range hood **200** may be paired to each other. When a connection is established, the cook top **100** may transmit to the range hood **200** a signal for controlling an operating state of the range hood **200** to correspond to an operating state of the cooker **120**, and may receive from the range hood **200** state information of the range hood **200**.

[0078] The second communicator **132** may be wirelessly connected with the user terminal device **300** in a Wi-Fi method. Specifically, the second communicator **132** may be wirelessly connected with the user terminal device **300** through an Access Point (AP), or directly connected with the user terminal device **300** through a Wi-Fi direct method. When a connection is established, the cook top **100** may transmit state information of the cook top **100** to the user terminal device **300**, and receive a control command for controlling operations of the cook top **100** from the user terminal device **300**. Further, the cook top **100** may convert the state information of the range hood **200** received through the first communicator **313** into state information having a Wi-Fi form, and transmit the converted state information having the the Wi-Fi form to the user terminal device **300** through the second communicator **132**. Further, the cook top **100** may convert the control signal for controlling the range hood **200** received through the second communicator **132** into a control signal having a Bluetooth form and transmit the same to the range hood **200** through the first communicator **131**.

[0079] In another example, the communicator **130** may first transceive various connection information such as SSID and session keys to and from the range hood **200** and the user terminal device **300** through an NFC communication method, and then use this information to be connected for communication and then transceive various signals through a Bluetooth method or a Wi-Fi method.

[0080] The processor **140** is a configuration for controlling the overall operations of the cook top **106**. Especially, the processor **140** may control the operating state of the cooker **120** according to a user manipulation input through the inputter **110**, and transmit to the range hood **200** a signal for controlling the operating state of the range hood **200** to correspond to the operating state of the cooker **120**.

[0081] Specifically, the processor **140** may determine whether or not the cooker **120** is operating, and if it is determined that the cooker **120** is operating, transmit a signal for operating the range hood **200** to the range hood **200**, and if it is determined that the cooker **120** is stopped from operating, the processor **140** may transmit a signal for stopping the range hood **200** from operating to the range hood **200**. Here, operation of the range hood **200** may mean operation of the exhaust fan **210** provided in the range hood **200**.

[0082] FIG. **3** is a block diagram schematically illustrating the configuration of the range hood, according to an embodiment of the present disclosure.

[0083] Referring to FIG. **3**, the range hood **200** includes an exhaust fan **210**, a communicator **220** and a processor **230**.

[0084] The exhaust fan **210** is a configuration for discharging indoor air outdoors through an exhaust pipe. The exhaust pipe is formed in a structure where it is connected to the main body of the range hood **200** and its other end extending outdoors. The exhaust fan **210** may be installed inside the exhaust pipe so that it may inhale the smell and smoke generated in the cook top **100** when cooking food in the cook top **100** and discharge the smell and smoke outdoors.

[0085] The communicator **220** is a configuration for performing communication with the cook top **100** in a wireless communication method. According to an embodiment of the present disclosure, the communicator **220** may be provided with a Bluetooth module, and perform a pairing connection with the cook top **100**. The communication method of the cook top **100** and the range hood **200** was explained above, and thus detailed explanation will be omitted hereinafter. However, the communication method between the cook top **100** and the range hood **200** is not limited to the aforementioned embodiment, and thus the communication between the cook top **100** and the range hood **200** may be performed in various communication methods including wired and wireless communication methods.

[0086] In response to receiving from the cook top **100** the signal for controlling the operating state of the exhaust fan **210** to correspond to the operating state of the cook top **100**, the processor **230** may control the operating state of the exhaust fan **210** to correspond to the operating state of the cook top **100** based on the received signal. Specifically, when the cooker **120** is operated in the cook top **100** and cooking is initiated, the cook top **100** may transmit to the range hood **200** a control signal notifying that the cooker **120** is being operated or a control signal for operating the exhaust fan **210** of the range hood **200**. In response to receiving the signal from the cook top **100**, the processor **230** of the range hood **200** may control the exhaust fan **210** to operate. Further, when the cooker **120** in the cook top **100** is stopped from operating, the cook top **100** may transmit to the range hood **200** a signal notifying that the cooker **120** is stopped from operating or a control signal for stopping the exhaust fan **210** of the range hood **200** from operating. Here, in response to receiving the signal from the cook top **100**, the processor **230** of the range hood **200** may control the exhaust fan **210** to stop operating. Further, the processor **230** may further receive information of the operating burner and the fire power level of the operating burner from the cook top **100**, and may control the operating intensity level of the exhaust fan **210** based on the received information.

[0087] Meanwhile, the processor **230** may control the communicator **220** to transmit the state

information of the range hood **200** to the cook top **100**. Here, the state information of the range hood **200** may include information of the operating state of the exhaust fan **210** and the operating intensity level of the exhaust fan **210**. Further, in another embodiment of the present disclosure, the range hood **200** may further include a light (not illustrated), wherein the state information of the range hood **200** may further include information of the operating state (ON/OFF state) of the light.

[0088] Meanwhile, the range hood **200** according to another embodiment of the present disclosure may further include an inputter and a display. The inputter is a configuration for receiving input of a control command for controlling the range hood **200**, that is, the control commands regarding the operating intensity level of the exhaust fan **210**, operation of the light and the pairing connection with the cook top **100**. The display may be a configuration for displaying the state information of the range hood **200**, and may display the control state according to the control commands input through the inputter, and may be realized as an LED.

[0089] In response to receiving input of the control command for a pairing connection through the inputter, the processor **230** may perform pairing with the cook top **100**, and when the pairing with the cook top is completed, the processor **230** may display through the display an indicator notifying that it is in a paired state.

[0090] FIG. **4** is a view provided to explain a data conversion processing procedure of the cook top, according to another embodiment of the present disclosure.

[0091] According to illustrations in FIG. **4**, regarding a data packet being transmitted from the user terminal device **300** to the cook top **100**, a data packet for controlling the cook top **100** and a data packet for controlling the range hood **200** may be distinguished according to different CLS ID **41** values.

[0092] The processor **140** may read the CLD ID **41** value included in a payload of the data packet received from the user terminal device **300**, and determine whether it is data for controlling the cook top **100** or data for controlling the range hood **200**, and if it is determined that the data is for controlling the range hood **200**, the processor **140** may convert the data into a data form of a first communication method and transmit the same to the range hood **200**. For this purpose, the CLS ID of the cook top **100** and the CLS ID of the range hood **200** may be pre-stored in a storage **150**, and the processor **140** may compare the pre-stored CLS ID and the CLS ID **41** value included in the payload of the data packet, and determine whether the data is for controlling the cook top **100** or for controlling the range hood **200**.

[0093] For example, the second communicator **132** may convert wireless communication data received from the user terminal device **300** into UART communication data, and the processor **140** may detect the data packet for controlling the range hood **200** from the converted UART communication data packet based on the CLS ID **41** value included in the payload. The processor **140** converts the detected data packet into a data packet form of the Bluetooth communication method and transmits the same to the range hood **200**.

[0094] FIG. **5** is a view provided to explain the pairing processing of the cook top and the range hood, according to an embodiment of the present disclosure.

[0095] According to FIG. **5**, the inputter **250** of the range hood **200** includes a power source key **51** for supplying power source, a lighting key **52** for turning ON/OFF the light **270**, an auto connectivity key **53** and a pairing key **54** for performing pairing with the cook top **100**. As illustrated in FIG. **5**, the inputter **250** may be integrated with the display **260** and be realized as a touch display, in which case a key and an area displaying an indicator representing operations of that key coincide with each other.

[0096] When the user inputs the pairing key **54**, the Bluetooth module included in the communicator **220** operates to perform operations of searching for a cook top with which Bluetooth connection can be made. Here, when the user inputs the pairing key **111** included in the inputter **110** of the cook top **100** with which the user intends to make Bluetooth connection, the Bluetooth module included in the first communicator **131** operates to perform Bluetooth pairing between the

cook top **100** and the range hood **200**. When the pairing is being performed, a flash light **55** is displayed above the pairing key **54**, and when the pairing is completed, "bt" **56** may be displayed on an area of the display **260** as an indicator to show that the pairing is completed, and the flash light **56** may stay on without further flashing. Further, "bt" may also be displayed on an area of the display **160** provided in the cook top **100** as an indicator to show that the pairing is completed.

[0097] Meanwhile, in the case where the auto connectivity key **53** is input to turn ON an automatic connection function, when the cook top **100** is operated to initiate cooking, the exhaust fan **210** of the range hood **200** may operate automatically, and when the cook top **100** is stopped from operating, the exhaust fan **210** of the range hood **200** may automatically stop operating. Specifically, when the automatic connection function is turned ON, the range hood **200** may transmit to the cook top **100** a signal notifying that the automatic connection function is turned ON, and when the cooker **120** is operated to initiate cooking, the cook top **100** that received the signal may transmit to the range hood **200** a signal notifying that the cooker **120** is being operated or a control signal for operating the exhaust fan **210** of the range hood **200**. In response to receiving the signal from the cook top **100**, the processor **230** of the range hood **200** may control the exhaust fan **210** to operate automatically.

[0098] Further, when the cooker **120** is stopped from operating in the cook top **100** that received the signal notifying that the automatic connection function is turned ON, the cook top **100** may transmit to the range hood **200** a signal notifying that the cooker **120** is stopped from operating or a control signal for stopping the exhaust fan **210** of the range hood **200** from operating. In response to receiving that signal from the cook top **100**, the processor **230** of the range hood **200** may control the exhaust fan **210** to stop operating.

[0099] The pairing key **54** may perform two kinds of functions depending on the duration of time it is pressed. For example, pairing between the cook top **100** and the range hood **200** may be performed only when the user presses the pairing key **54** for a predetermined duration of time or more (for example, three seconds), and while the pairing is being performed, the pairing key **54** is operated as a pairing ON/OFF selecting key for momentarily disconnecting or re-connecting the Bluetooth pairing.

[0100] Meanwhile, in a state where the cook top **100** and the range hood **200** are paired, peer Bluetooth data may be pre-stored in a respective storage **150**, **250** so that even when the power source of either side is turned OFF due to blackout, automatic pairing can be performed as soon as the power source is turned ON. The peer Bluetooth data may be stored in the storage **150**, **240** every time the pairing is performed. Accordingly, even when the power source of either side is turned OFF due to blackout and the like, the pairing procedure need not be gone through again from the beginning, and thus it is possible to save the duration of time necessary in the pairing.

[0101] FIG. **6** is a view provided to explain a structure of the cook top, according to an embodiment of the present disclosure.

[0102] According to the embodiment illustrated in FIG. **6**, the cook top **100** may be realized as a gas range that uses gas fuel. The cook top **100** may include five burners of different sizes **121-1** to **121-5** included in the cooker **120**, and may include dial type switches **111-1** to **111-5** for manipulating the fire power (output) for each of the burners. Here, the Bluetooth module **131** and the Wi-Fi module **132** included in the cook top **100** are disposed as far away as possible from each other in order to prevent deterioration by the burners, and the Bluetooth module **131** is installed inside one surface of the main body of the cook top **100**, and the Wi-Fi module **132** is installed at an outer side of the one surface of the main body of the cook top **100**. Further, the Bluetooth module **131** and the Wi-Fi module **132** are disposed in a direction where a relatively small burner is located, thereby minimizing the deterioration and external damage by the burners.

[0103] FIGS. **7A**-**7B** are views provided to explain a structure of the Bluetooth module provided in the cook top, according to an embodiment of the present disclosure.

[0104] As illustrated in FIG. **7A**, the Bluetooth module **131** may include holders **71**, **72** included

inside the Bluetooth module **131**, and the holders **71**, **72** may be assembled such that projections protruding from a plurality of grooves provided in the first holder **71**, the projections corresponding to the grooves of the second holder **72**, form an inner space as they are geared as illustrated in FIG. **7**B, and the Bluetooth module **131** is included in the inner space. It is preferable that the holders **71**, **72** are made of material that has strong resistance to heat, for example, PCB.

[0105] FIGS. **8**A-**8**C are views provided to explain a structure of the Wi-Fi module provided in the cook top, according to an embodiment of the present disclosure.

[0106] As illustrated in FIG. **8**A, the Wi-Fi module **132** may include holders **81**, **82** that include the Wi-Fi module inside thereof, and just as the Bluetooth module **131**, the holders **81**, **82** may be assembled such that projections protruding from a plurality of grooves provided in the first holder **81**, the projections corresponding to the grooves of the second holder **82**, form an inner space as they are geared, and the Wi-Fi module **132** is included in the inner space. The holders **81**, **82** of the Wi-Fi module **132** may be made of PCB as well.

[0107] Specifically, as illustrated in FIG. **8**B, the Wi-Fi module **132** includes holes corresponding to the projections **83**, **84** of the second holder **82**, and the projections **83**, **84** are bound in these holes. Especially, the second holders **82** may include stumbling blocks **85**, **86** configured to seat the Wi-Fi module **132** and a mis-assembly prevention block **87**. That is, the Wi-Fi module **132** may be attached to the second holder **82** in a structure where the Wi-Fi module **132** is fitted to the stumbling blocks **85**, **86** of the second holder **82**, wherein the mis-assembly prevention block **87** is provided on a lower portion where the Wi-Fi module **132** of the second holder **82** is attached as illustrated in FIG. **8**C, thereby preventing the Wi-Fi module **132** from being bound in a wrong direction.

[0108] FIG. **9** and FIG. **10** are a view provided to explain a structure of the range hood, according to an embodiment of the present disclosure.

[0109] FIG. **9** is a view provided to explain an exterior structure of the range hood **200**, according to an embodiment of the present disclosure. As illustrated in FIG. **9**, one end of the main body **92** of the range hood **200** is connected with the exhaust pipe **91**, and indoor air may be discharged outside through the exhaust pipe **91**. The other end of the main body **93** may be connected with the exhaust plate **93** that includes the exhaust fan **210**, and the inputter **250** may be included at a side surface of the exhaust plate **93**. According to the embodiment of FIG. **10**, the inputter **250** is produced in an integral form bound with the display **260**, and thus, in an area where each key of the inputter **250** is located, information related to the function of that key may be displayed. Further, the display **260** may be realized as a touch display that includes the inputter **250**. As illustrated in FIG. **10**, the Bluetooth module **220** may be attached to the range hood **200** in a form where it is disposed on a bottom end of a lower portion of the inputter **250** and the display **260** such that it does not overlap with the inputter **250** and the display **260**.

[0110] FIGS. **11**A-**11**D are views illustrating a cook top control UI of the user terminal device, according to an embodiment of the present disclosure.

[0111] As illustrated in FIG. **11**A, on the display **310** provided in the user terminal device **300**, a UI screen for controlling the cook top **100** or the range hood **200** may be displayed. The UI screen that may control the cook top **100** or the range hood **200** may be a screen provided as an application for controlling a plurality of home appliances is executed in the user terminal device **300**.

[0112] When the application for controlling the home appliances is executed, menus for controlling various home appliances, including a menu **1110** for controlling the cook top **100** and a menu **1120** for controlling the range hood **200** are displayed, and when one of the menus is selected, a UI screen for controlling the home appliance corresponding to the selected menu may be displayed. On each menu **1110**, **1120**, information ("Cooking in progress", "Low") showing the operating state of the home appliance corresponding to each menu may be displayed.

[0113] When the menu **1110** for controlling the cook top **100** is selected, as illustrated in FIG. **11**B, a UI showing the operating state of the cooker **120** of the cook top **100** may be displayed. This UI

may include a first area **1130** briefly showing the operating information of the cooker **120**, a second area **1140** representing an area that shows the operating information of the cooker **120** in more detail, and a third area **1150** showing the remaining time according to the set timer.

[0114] The user terminal device **300** receives from the cook top **100** specifically the ON/OFF state information of each burner included in the cooker **120** of the cook top **100** and the state information of the cook top **100** including the fire power intensity information of each burner, and displays in the second area **1140** the information of ON/OFF and fire power intensity of each burner based on the received state information. Here, the information of ON/OFF and fire intensity of each burner may be provided by a UI where GUIs **1141** to **1144** representing each burner correspond to the size and actual placement of each burner in the cook top **100**, as illustrated in FIG. **11**B. In each of the GUIs **1141** to **1144**, the ON/OFF information of the corresponding burner is displayed, and on the GUI **1142**, **1143** corresponding to the burner in ON state, information of the fire power level such as "Level 9" and "Power boost" may also be displayed. Generally, the higher the level the higher the fire power.

[0115] If at least one of the burners of the cook top **100** is being operated in the fire power of a predetermined level or more, the user terminal device **300** may display in the first area **1130** a phrase ("cooking in progress") or a sign notifying that the cook top **100** is in a cooking progress, and when, for example, two of the burners of the cook top **100** are in ON state, a phrase such as "2 burners are on" notifying the number of the burners in ON state may be displayed.

[0116] If operation of the cook top **100** is temporarily paused through the inputter **110** of the cook top **100**, the burner in ON state may be adjusted to a lower fire power level of "level 2" as illustrated in FIG. **11**C, and on the GUI **1142**, **1143** corresponding to the burner in ON state displayed in the second area **1140**, a fire power level adjusted to such as "level 2" may be displayed. Further, in the first area **1130**, a phrase ("paused") or a sign that notifies that the cook top **100** is stopped from operating may be displayed, and a phrase such as "Every turned on burner is set as level 2" notifying that all the burners in ON state are adjusted to level 2 may be displayed.

[0117] Meanwhile, as illustrated in FIG. **11**D, when the power source of the cook top **100** is turned OFF or all the burners are turned OFF, all the GUIs **1141** to **1144** displayed in the second area **1140** may be displayed in OFF state, and in the first area **1130**, a phrase such as "All burners are off" notifying that all the burners are turned off may be displayed.

[0118] Meanwhile, although not illustrated, when the GUIs **1141** to **1144** displayed in the second area **1140** of the user terminal device **300** is manipulated, it is possible to transmit the manipulating command to the cook top **100**, and adjust the ON/OFF and fire power level of the burner of the cook top **100** corresponding to the manipulated GUI.

[0119] FIG. **12** is a view illustrating a UI for setting a timer of the cook top, according to an embodiment of the present disclosure.

[0120] When the user selects the timer menu of the third area **1150** of the screen displayed on the display **310**, as illustrated in FIG. **12**, a UI screen for setting the timer of the cook top **100** is displayed. On this UI screen, a donut-type bar **1210** for displaying the time left until the timer ends and the elapsed time may be displayed, and in the center of a donut-shaped bar **1210**, the left time (60 min) and a STOP button **1220** for stopping the timer may be displayed. On the bottom end of the screen, a button **1230** for simply manipulating the time being set at the timer may be displayed, and this button **1230** is for adding 5 minutes, 10 minutes or 30 minutes such as by "+5 min", "+10 min" and "+30 min" to the time being set by the user. With this button **1230**, the user may add a predetermined time or a directly input time to the time being set in the timer. Otherwise, the user may touch and drag the bar **1210** to adjust the time being set in the timer.

[0121] When the user sets the time of the timer in the UI screen for setting the timer of the cook top **100**, the set time information is transmitted to the cook top **100**, the timer **180** of the cook top **100** counts the set time, and transmits the count information to the user terminal device **300** through the second communicator **132**. Based on the received count information, the user terminal device **300**

may display on the bar **1210** the time elapsed since the count began and the time left until the end of count, and may display the same in the center of the bar in text form. When the count ends, the cook top **100** may transmit the count end information notifying that the count ended to the user terminal device **300**, and when the user terminal device **300** receives the count end information, the cook top **100** may provide a notice through sound or screen.

[0122] FIG. **13** is a view illustrating a range hood control UI of the user terminal device, according to an embodiment of the present disclosure.

[0123] On the application execution screen for controlling the home appliance illustrated in FIG. **11**A, when the user selects the menu **1120** for controlling the range hood **200**, as illustrated in FIG. **13**, the UI showing the operating state of the range hood **200** may be displayed. At the upper end of the UI displayed, a power source button **1310** for turning ON/OFF the power source of the range hood **200** and an intensity adjustment button **1320** for adjusting the intensity of the exhaust fan **210** may be displayed, and at the middle end of the UI displayed, a GUI **1330** showing the ON/OFF state of the light **270** may be displayed, and at the bottom end of the UI displayed, a button **1340** for manipulating ON/OFF of the light **270** and a button **1350** for operating the timer of the range hood **200** may be displayed. When the user inputs the control command for controlling the range hood **200** by manipulating the aforementioned buttons **1310**, **1320**, **1340**, **1350**, the input control command is transmitted to the range hood **200** through the cook top **10**, and the operation of the range hood **200** may be controlled according to the received control command. Further, the range hood **200** may transmit information of the operating state (ON/OFF of the exhaust fan **210**, intensity of the exhaust fan and ON/OFF of the light **270**, etc.) to the user terminal device **300** through the cook top **100**, and the user terminal device **300** may display the received information of the operating state of the range hood **200** on the UI showing the operating state of the range hood **200**.

[0124] FIG. **14** is a block diagram illustrating in detail the configuration of the cook top, according to another embodiment of the present disclosure.

[0125] As illustrated in FIG. **14**, the cook top **100′** according to another embodiment of the present disclosure includes an inputter **110**, a cooker **120**, a communicator **130**, a processor **140**, a storage **150**, a display **160**, a sensor **170**, a timer **180** and a user interface **190**. Hereinafter, configurations overlapping with the configurations described with reference to FIG. **2** will be omitted.

[0126] The processor **140** includes a RAM **141**, a ROM **142**, a CPU **143**, a first to nth interfaces **144-1** to **144-**n and a bus **145**, as illustrated in FIG. **15**. Here, the RAM **141**, the ROM **142**, the CPU **143** and the first to nth interfaces **144-1** to **144-**n may be connected to each other through the buses **145**.

[0127] The ROM **142** stores command sets and the like for booting the system. The CPU **143** copies in the RAM **141** various programs stored in the storage **150**, and executes the programs copied in the RAM **141** to perform various operations.

[0128] The CPU **143** accesses the storage **150** to perform booting using the O/S stored in the storage **150**. Further, the CPU **143** performs various operations using the various programs stored in the storage **150**.

[0129] The first to nth interfaces **144-1** to **144-**n are connected with the aforementioned various configuration elements. One of the interfaces may be a network interface to be connected with an external device through the network.

[0130] The storage **150** may store various modules for operating the cook top **100′**. Specifically, the storage **150** may store a base module for processing signals being transmitted from each hardware included in the cook top **100′**, a storage module for managing a database or registry, a security module, a communication module and the like.

[0131] Further, the storage **150** may store connection information for communication connection with the range hood **200** and the user terminal device **300**. The processor **140** may perform wireless communication with the range hood **200** and the user terminal device **300** using the connection

information stored in the storage **150**.

[0132] The display **160** is a configuration for displaying a GUI for controlling the cook top **100′** or displaying the state of the cook top **100′**, and may include an LED for displaying the GUI.

[0133] The sensor **170** may sense whether or not a cooking device is placed on top of the cooker **120**, and for this purpose, the sensor **170** may be provided with any one of a weight sensor and a pressure sensor. When the cooker **120** is operated in a state where there is no cooking device on top of the cooker **120**, the processor **140** may automatically stop the operation of the cooker **120** after a predetermined time.

[0134] In response to receiving time information from the user terminal device **300** the time set in the timer, the timer **180** counts the set time, and the processor **140** transmits the count information in the timer **180** to the user terminal device **300**.

[0135] The user interface **190** is a configuration element for sensing user interaction for controlling the overall operations of the cook top **100′**. Especially, the interface **190** may include various interaction sensing devices such as a microphone (not illustrated), and an infrared receiver (not illustrated) and the like.

[0136] FIG. **15** is a block diagram illustrating in detail a configuration of the range hood, according to another embodiment of the present disclosure.

[0137] The range hood **200′** according to this another embodiment of the present disclosure includes an exhaust fan **210**, a communicator **220**, a processor **230**, a storage **240**, an inputter **250**, a display **260**, a light **270**, a sensor **280** and a user interface **290**. Hereinafter, explanation on configurations that overlap with the configurations described with reference to FIG. **3** will be omitted.

[0138] As illustrated in FIG. **15**, the processor **230** includes a RAM **231**, a ROM **232**, a CPU **233**, a first to nth interfaces **234-1** to **234**-*n* and a bus **235**. Here, the RAM **231**, the ROM **232**, the CPU **233**, and the first to nth interfaces **234-1** to **234**-*n* may be connected to each other through the buses **235**.

[0139] In the ROM **232**, command sets and the like for system booting are stored. The CPU **233** copies in the RAM **231** various programs stored in the storage **240**, and executes the programs copied in the RAM **231** to perform various operations.

[0140] The CPU **233** accesses the storage **240** and performs booting using the O/S stored in the storage **240**. Further, the CPU **233** performs various operations using the various programs stored in the storage **240**.

[0141] The first to nth interfaces **234-1** to **234**-*n* are connected to the aforementioned various configuration elements. One of the interfaces may be a network interface connected with an external device through the network.

[0142] The storage **240** may store various modules for operating the range hood **200′**. Specifically, the storage **240** may store a base module for processing signals being transmitted from each hardware included in the range hood **200′**, a storage module managing a database or a registry, a security module, a communication module and the like.

[0143] Further, the storage **240** may store connection information for communication connection with the range hood **200′** and the cook top **100**. The processor **140** may perform wireless communication with the cook top **100** using the connection information stored in the storage **240**.

[0144] The display **260** is a configuration for displaying a GUI for controlling the range hood **200′** or displaying the state of the range hood **200′**, and may include an LED for displaying the GUI.

[0145] The light **270** is a configuration provided at a bottom end of the main body of the range hood **200′** to provide light to the cook top **100**. ON/OFF of the light **270** may be controlled according to manipulation of the inputter **250** or remote control of the user terminal device **300**.

[0146] The sensor **280** is a configuration for sensing smoke or steam generated in the cook top **100**. When the smoke or steam is sensed through the sensor **280**, the processor **230** may provide a notice to notify the user of the smoke or steam or automatically operate the exhaust fan **210**. The method

for providing the notice may display the notice through the display **260**, or transmit the notice information to the user terminal device **300** through the cook top **100**.

[0147] FIG. **16** is a flowchart provided to explain the control method of the cook top, according to an embodiment of the present disclosure.

[0148] Initially, a user manipulation is input (S**1610**).

[0149] Then, according to the input user manipulator, the operating state of the cooker for heating the cooking device placed on the cook top is controlled (S**1620**).

[0150] Then, a signal for controlling the operating state of the range hood to correspond to the operating state of the cooker is transmitted to the range hood, and the state information of the cook top including information of the operating state of the cooker is transmitted to the user terminal device that performs communication with the cook top (S**1630**). Here, when the cooker is operated, it operates the range hood, and when the cooker is stopped from operating, a signal for stopping the range hood from operating may be transmitted to the range hood. Further, the cook top may perform communication with the user terminal device through Wi-Fi, and perform communication with the range hood through Bluetooth. Further, here, the state information of the cook top may include at least one of information of whether or not the cooker is operating, operating state information of each of the plurality of burners included in the cooker, fire power level and timer information.

[0151] Further, a control command for controlling the range hood may be received from the user terminal device, and a signal for operating the range hood according to the received control command may be transmitted to the range hood.

[0152] FIG. **17** is a flowchart provided to explain the control method of the range hood, according to an embodiment of the present disclosure.

[0153] First, a signal for controlling the operating state of the exhaust fan is provided in the range hood to correspond to the operating state of the cook top is received (S**1710**). Prior to this, for communication connection between the cook top and the range hood, as a pairing command is input, pairing with the cook top may be performed, and when the pairing with the cook top is completed, an indicator notifying that the cook top and the range hood are in a paired state may be provided.

[0154] Then, the operating state of the exhaust fan is controlled to correspond to the operating state of the cook top based on the received signal (S**1720**). Here, in response to receiving from the cook top the signal notifying that the cook top is being operated, the exhaust fan may be operated, and in response to receiving from the cook top the signal notifying that the cook top is stopped from operating, the operation of the exhaust fan may be stopped.

[0155] Then, the state information of the range hood is transmitted to the cook top (S**1730**).

[0156] As aforementioned, according to various embodiments of the present disclosure, the user may check the operating state of the cook top and the hood and control their operations more conveniently.

[0157] The control method of the cook top **100** according the aforementioned various embodiments may be realized as a program and be stored in various record media. That is, a computer program processed by various processors to execute the various aforementioned control methods may be used in a state where it is stored in a record medium.

[0158] For example, a non-transitory computer readable medium may be provided, the medium storing a program configured to perform a step of receiving input of a user manipulation, a step of controlling an operation state of the cooker for heating a cooking device placed on the cook top according to the input user manipulation, and a step of transmitting to the range hood a signal for controlling the operating state of the range hood to correspond to the operating state of the cooker, and transmitting the state information of the cook top including information of the operating state of the cooker to the user terminal device configured to perform communication with the cook top.

[0159] The non-transitory computer readable medium refers to not a medium that stores data for a

short period of time such as a register, cache, memory and the like, but a medium readable by devices and that stores data semi-permanently. Specifically, the aforementioned various middleware or programs may be stored in a non-transitory computer readable medium such as a CD, DVD, hard disk, blue ray disk, USB, memory card, ROM and the like may be provided.

[0160] The foregoing exemplary embodiments and advantages are merely exemplary and are not to be construed as limiting the present invention. The present teaching can be readily applied to other types of apparatuses. Although the present disclosure has been described with an exemplary embodiment, various changes and modifications may be suggested to one skilled in the art. It is intended that the present disclosure encompass such changes and modifications as fall within the scope of the appended claims.

Claims

1. A cook top comprising: at least one burner configured to generate heat in a cooking container; a communicator configured to perform communication with a range hood; and a processor configured to: control an operating state of the at least one burner in response to an input, and transmit, via the communicator, a first signal to the range hood, the first signal including information for controlling an operating state of the range hood corresponding to the operating state of the cook top, transmit, via the communicator, the first signal to the range hood, the first signal being for operating the range hood when the at least one burner is operated; and transmit, via the communicator, the first signal to the range hood, the first signal being for stopping the range hood from operating when the at least one burner is stopped from operating.

2. The cook top according to claim 1, wherein the processor is configured to: transmit, via the communicator, the first signal including information comprising at least one of the state information of the at least one burner, a power level of the at least one burner, and timer information.

3. The cook top according to claim 1, wherein the at least one burner comprises: a plurality of heating elements configured to convert electric energy into thermal energy to generate heat; and an upper plate provided at an upper side of at least one of the heating elements to transmit heat to the cooking container.

4. The cook top according to claim 1, wherein the at least one burner is configured to generate heat using gas fuel.

5. The cook top according to claim 1, wherein the at least one burner is configured to generate the heat in the cooking container by an inductance action.

6. The cook top according to claim 1, wherein the communicator comprises a first communicator configured to perform the communication with the range hood and further comprises a second communicator configured to communicate with a user terminal device, and wherein the processor is configured to: transmit, via the second communicator, a second signal to the user terminal device, the second signal comprising state information of the cook top.

7. The cook top according to claim 6, wherein the processor is configured to: determine at least one of the state information of the at least one burner, a power level of the at least one burner, and timer information; and transmit, via the second communicator, the at least one of the state information, the power level or the timer information to the user terminal device.

8. The cook top according to claim 6, wherein the communicator comprises a first communicator comprising a Bluetooth module configured to perform communication with the range hood in a Bluetooth method.

9. The cook top according to claim 6, wherein the second communicator comprises a Wi-Fi module configured to perform communication with the user terminal device in a Wi-Fi method.

10. A range hood comprising: an exhaust fan configured to discharge indoor air to outdoors; a communicator configured to perform communication with a cook top; and a processor configured

to: receive, via the communicator, a signal from the cook top, the signal including information for controlling an operating state of the exhaust fan corresponding to an operating state of the cook top, and control the exhaust fan to operate corresponding to the operating state of the cook top in response to receiving the signal from the cook top.

11. The range hood according to claim 10, wherein the processor is configured to: control the exhaust fan to start operating in a case that the cook top starts operating, and control the exhaust fan to stop from operating in a case that the cook top is stopped from operating.

12. The range hood according to claim 11, wherein the processor is configured to: adjust an operating intensity level of the exhaust fan corresponding to a power level of at least one burner included in the cook top.

13. The range hood according to claim 11, wherein, in an automatic connection mode, the range hood is configured to receive, from the cook top, a signal notifying that the cook top is being operated when the cook top is operated to initiate cooking.

14. The range hood according to claim 10, wherein the communicator comprises an infrared receiver configured to perform communication with the range hood in a wireless method.

15. A system comprising: a cook top including at least one burner configured to generate heat in a cooking container and a communicator configured to perform communication with a range hood; and the range hood including an exhaust fan configured to discharge indoor air to outdoors and a first communicator configured to perform communication with the cook top; wherein the cook top is configured to: control an operating state of the at least one burner in response to an input, and transmit, via the communicator, a signal to the range hood, the signal including information for controlling an operating state of the exhaust fan corresponding to an operating state of the cook top, and wherein the range hood is configured to: receive, via a second communicator, the signal from the cook top, and control the exhaust fan to operate corresponding to the operating state of the cook top in response to receiving the signal from the cook top.

16. The system according to claim 15, wherein the system is configured to: control the exhaust fan to start operating in a case that the cook top starts operating, and control the exhaust fan to stop from operating in a case that the cook top is stopped from operating.

17. The system according to claim 15, wherein the system is configured to adjust an operating intensity level of the exhaust fan corresponding to a power level of the at least one burner.

18. The system according to claim 15, wherein the system further comprises an auto connectivity key configured to turn on an automatic connection function, wherein, in the automatic connection function, when the cook top is operated to initiate cooking, the exhaust fan of the range hood operates automatically, and wherein, in the automatic connection function, when the cook top is stopped from operating, the exhaust fan of the range hood automatically stops operating.

19. The system according to claim 18, wherein, in the automatic connection function, the range hood is configured to receive, from the cook top, a signal notifying that the cook top is being operated when the cook top is operated to initiate cooking.

20. The system according to claim 15, wherein the second communicator comprises an infrared receiver configured to perform communication with the range hood in a wireless method.