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(54) **CONTROLLING HEAT CAPABILITY OF APPLIANCE ACCORDING TO USER PROXIMITY AND NOTIFYING REMOTE USERS VIA INTERNET FOR INCREASED SAFETY**

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CPC A47J 36/321; H04L 67/54; H04L 12/4625; H04L 67/535; F24C 3/124; F24C 7/082;
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(56) **References Cited**

U.S. PATENT DOCUMENTS

4,775,913 A 10/1988 Ekblad
5,380,985 A 1/1995 Graham
(Continued)

FOREIGN PATENT DOCUMENTS

CA 2152015 12/1996

OTHER PUBLICATIONS

Wallflower, "Wallflower keeps your family safe", downloaded from http://wallflower.com/index.html on May 18, 2016.

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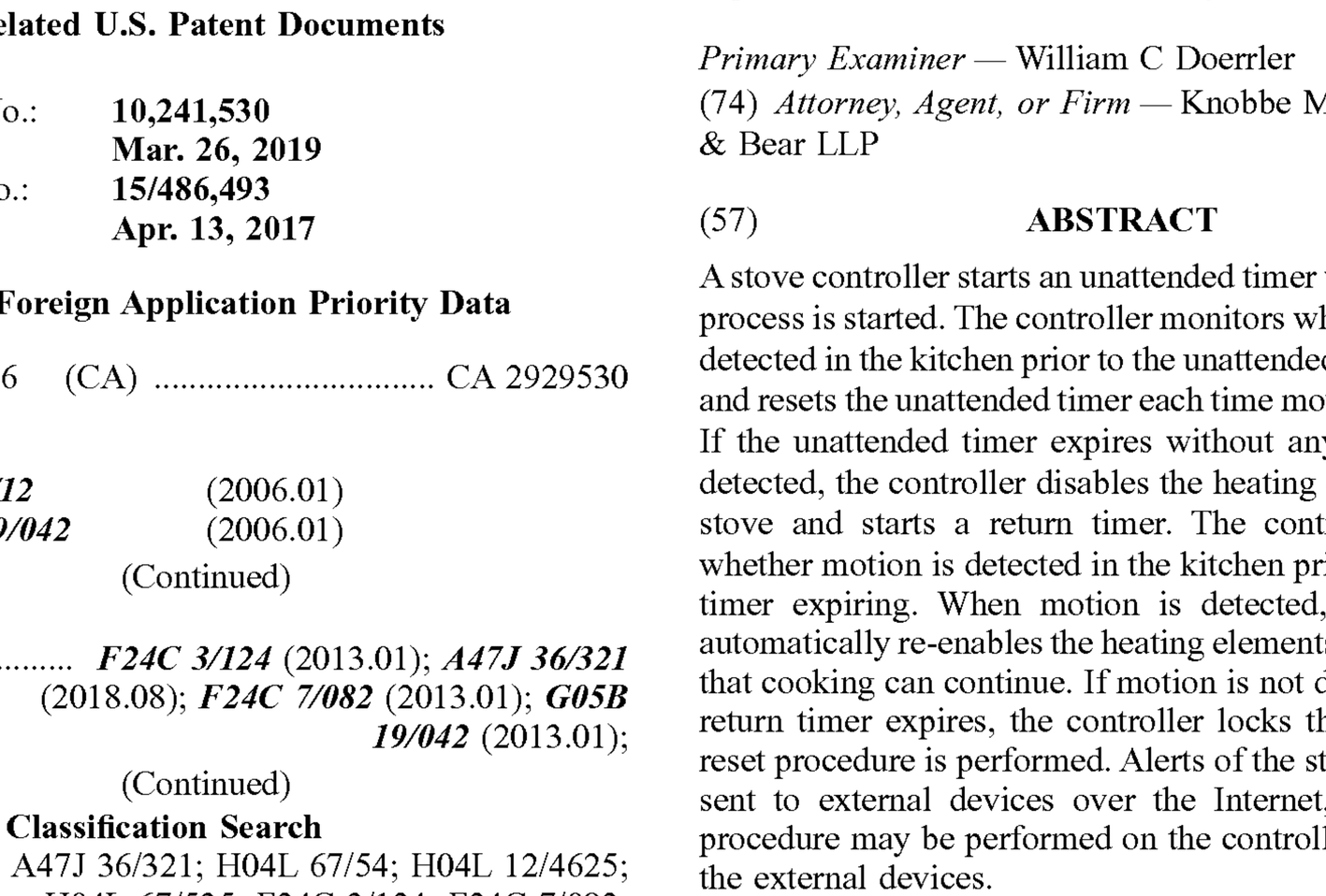
(57) **ABSTRACT**

A stove controller starts an unattended timer when a cooking process is started. The controller monitors whether motion is detected in the kitchen prior to the unattended timer expiring and resets the unattended timer each time motion is detected. If the unattended timer expires without any motion being detected, the controller disables the heating elements of the stove and starts a return timer. The controller monitors whether motion is detected in the kitchen prior to the return timer expiring. When motion is detected, the controller automatically re-enables the heating elements of the stove so that cooking can continue. If motion is not detected and the return timer expires, the controller locks the stove until a reset procedure is performed. Alerts of the stove activity are sent to external devices over the Internet, and the reset procedure may be performed on the controller or on one of the external devices.

60 Claims, 6 Drawing Sheets



(51) **Int. Cl.**

G05D 23/19	(2006.01)
H04L 67/54	(2022.01)
H04L 12/18	(2006.01)
H04L 12/46	(2006.01)
A47J 36/32	(2006.01)
H04L 67/50	(2022.01)
F24C 7/08	(2006.01)
H04L 67/10	(2022.01)

(52) **U.S. Cl.**

CPC ***G05B 19/0428*** (2013.01); ***G05D 23/1917*** (2013.01); ***G05D 23/1951*** (2013.01); ***H04L 12/1895*** (2013.01); ***H04L 12/4625*** (2013.01); ***H04L 67/535*** (2022.05); ***H04L 67/54*** (2022.05); *A47J 36/32* (2013.01); *G05B 2219/2613* (2013.01); *H04L 67/10* (2013.01)

(58) **Field of Classification Search**

CPC G05B 19/042; G05B 19/0428; G05B 2219/2613; G05D 23/1951; G05D 23/1917; H01L 12/1885; H01L 12/1895; H01L 67/10

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,717,188	A	2/1998	Vaillancourt	
6,130,413	A	10/2000	Rak	
2004/0041684	A1*	3/2004	Mandell	H03K 17/9517 338/32 R
2005/0109333	A1*	5/2005	Thomas	F24C 7/082 126/39 BA
2006/0197660	A1*	9/2006	Luebke	G08B 25/009 340/3.1
2008/0255919	A1*	10/2008	Gorder	G06Q 10/06 705/7.13
2012/0132635	A1*	5/2012	Mishra	G08B 17/00 219/209
2014/0251987	A1*	9/2014	Reay	F24C 7/088 219/446.1
2015/0161835	A1*	6/2015	Jablokov	H04Q 9/00 340/5.61

* cited by examiner

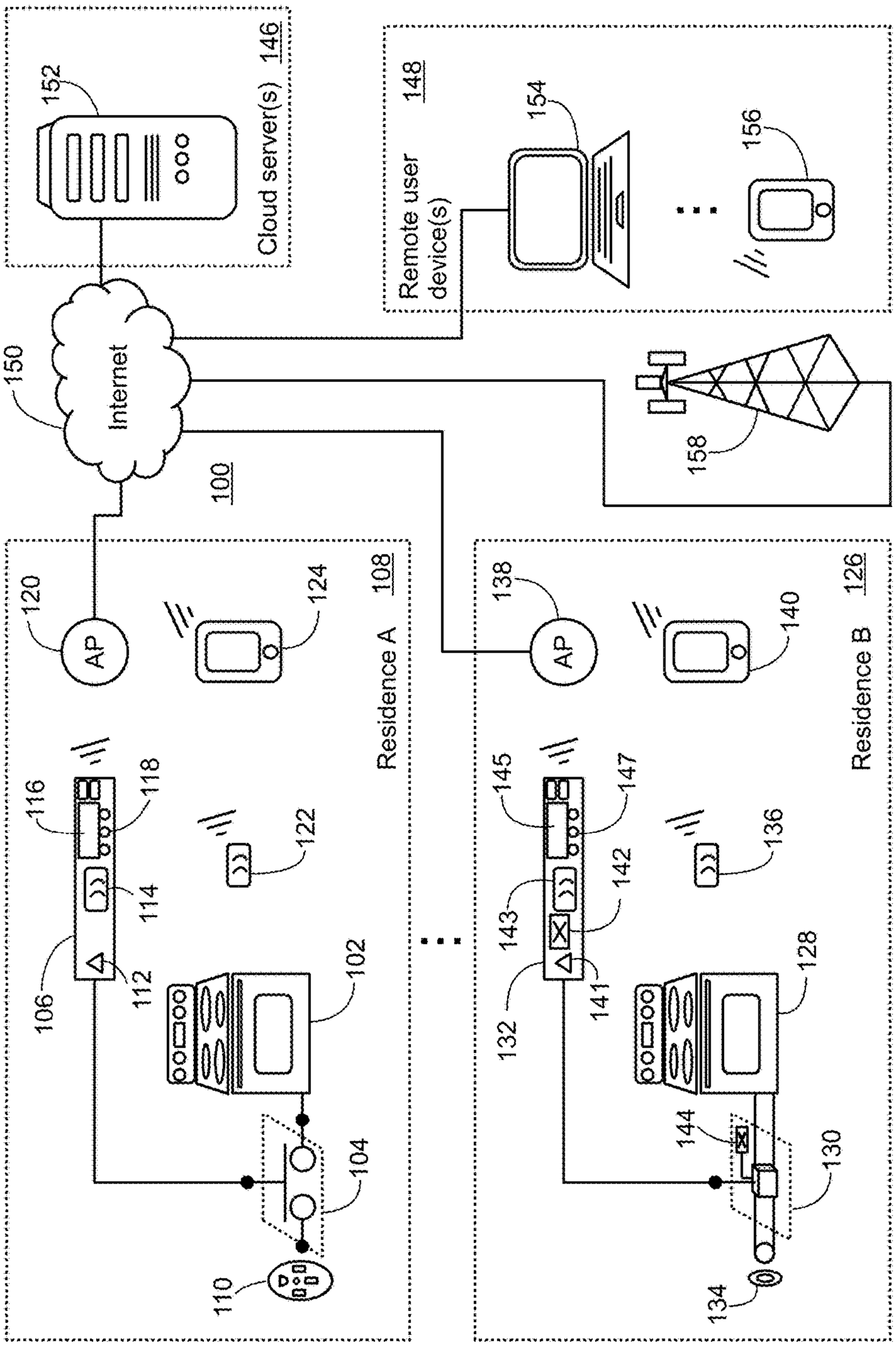

Cloud server(s) 146
152
Remote user device(s) 148
154
156
Internet
150
100
158
Residence A 108
AP
120
124
116
118
114
122
106
112
102
104
110
Residence B 126
AP
138
140
145
147
142
143
136
132
141
128
144
130
134

FIG. 1

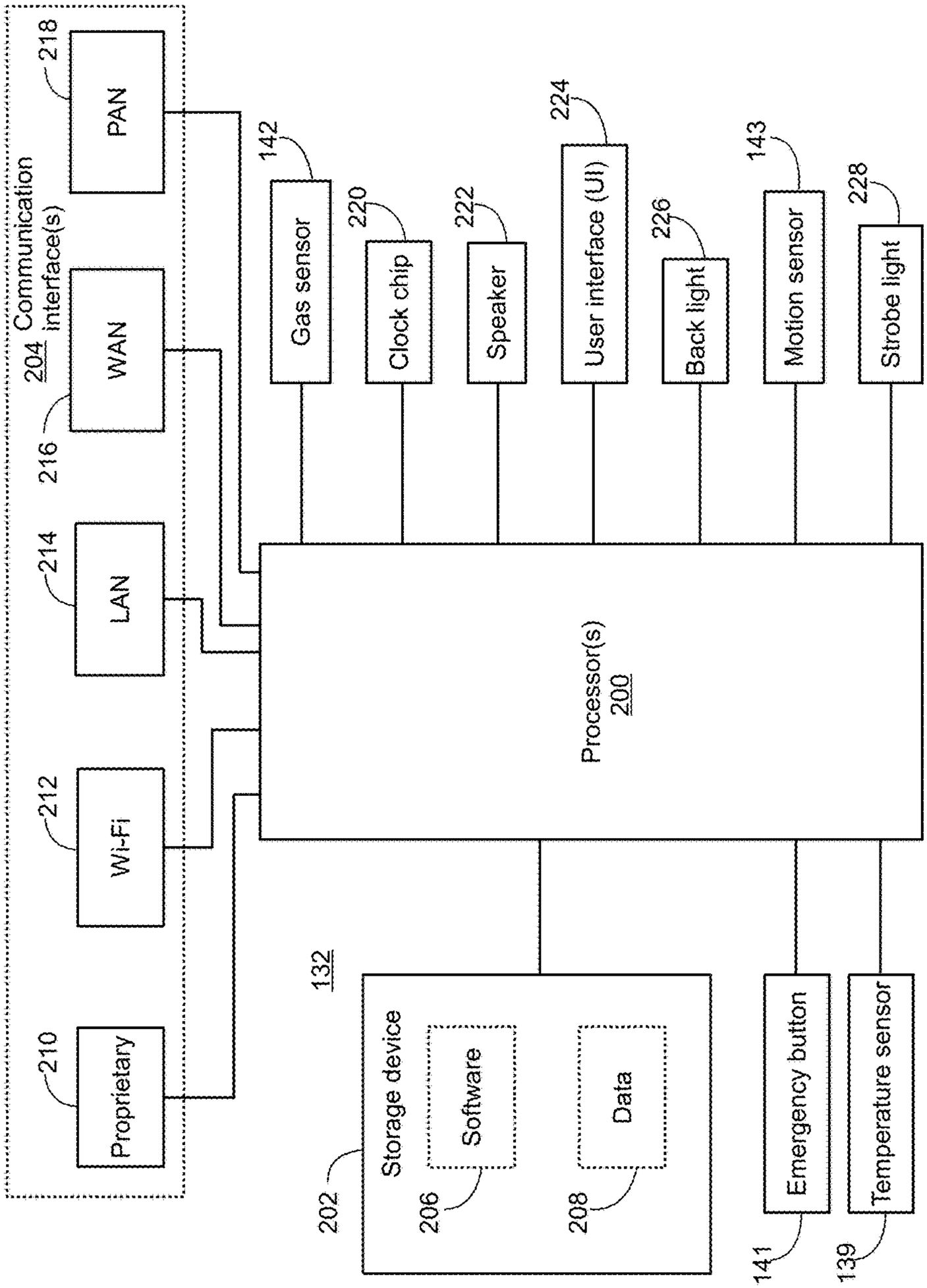

Communication interface(s)
204
Wi-Fi
212
LAN
214
WAN
216
PAN
218
Proprietary
210
Processor(s)
200
Storage device
202
Software
206
Data
208
Gas sensor
142
Clock chip
220
Speaker
222
User interface (UI)
224
Back light
226
Motion sensor
143
Strobe light
228
Emergency button
141
Temperature sensor
139

FIG. 2

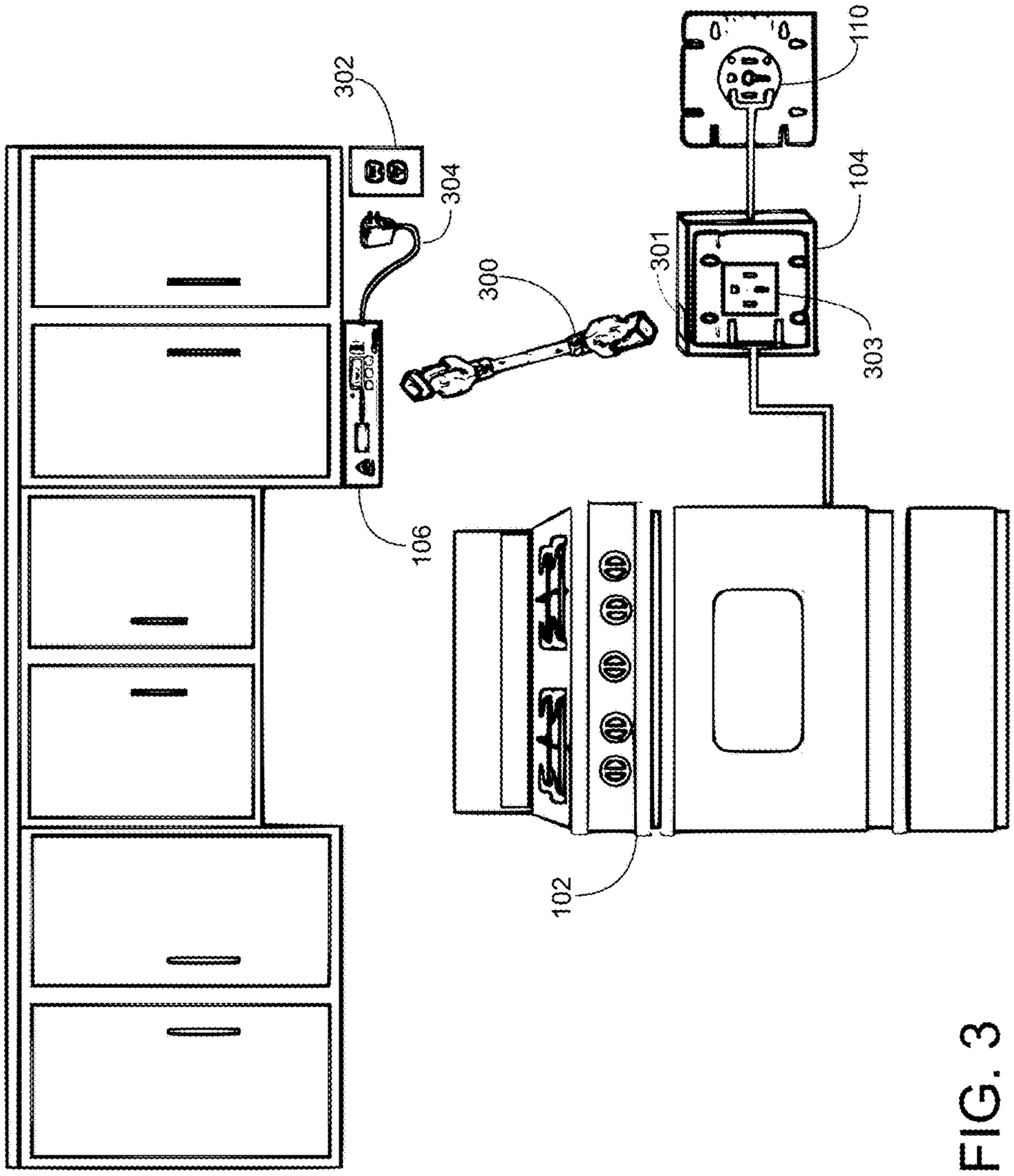


FIG. 3

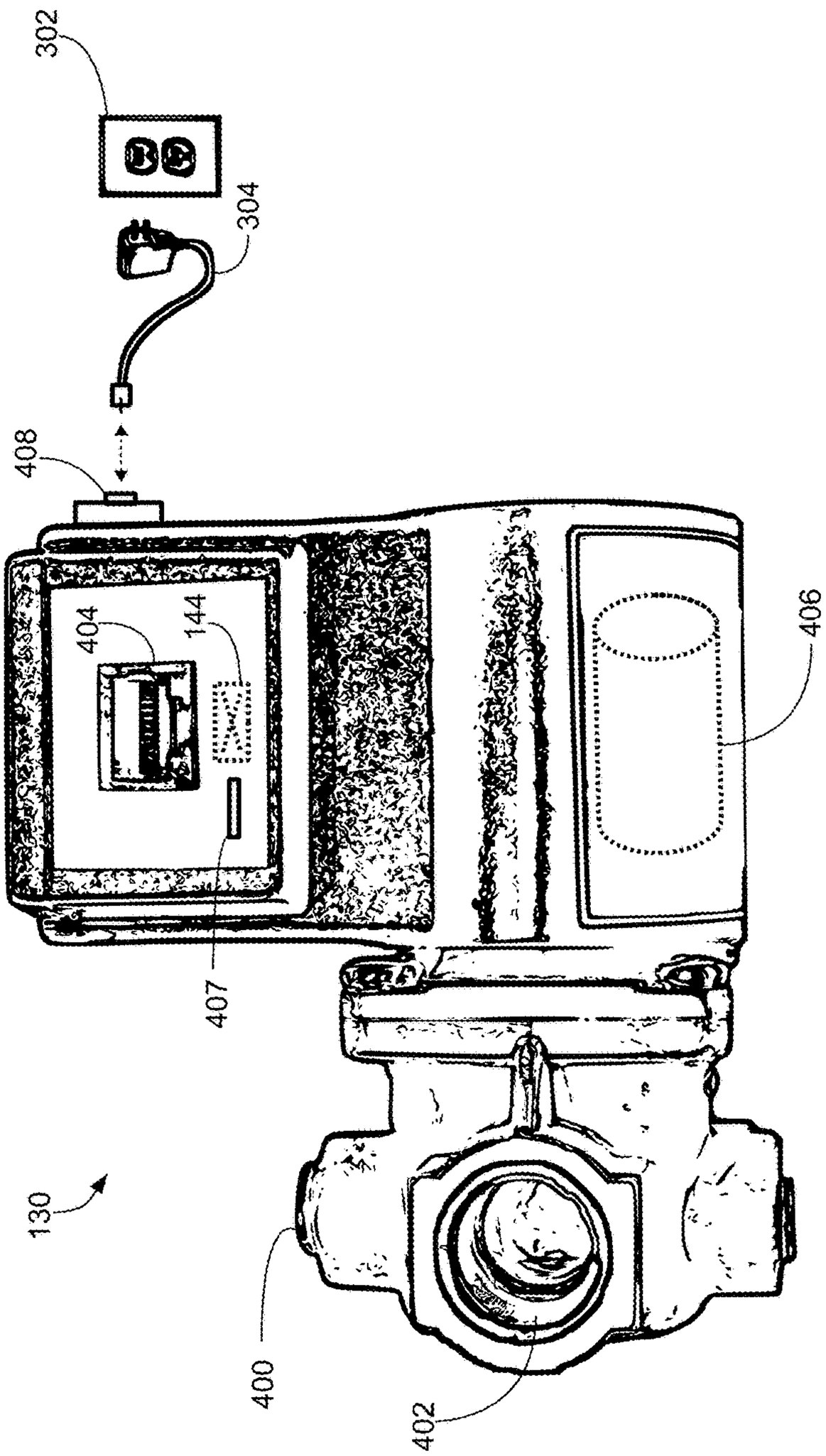


FIG. 4

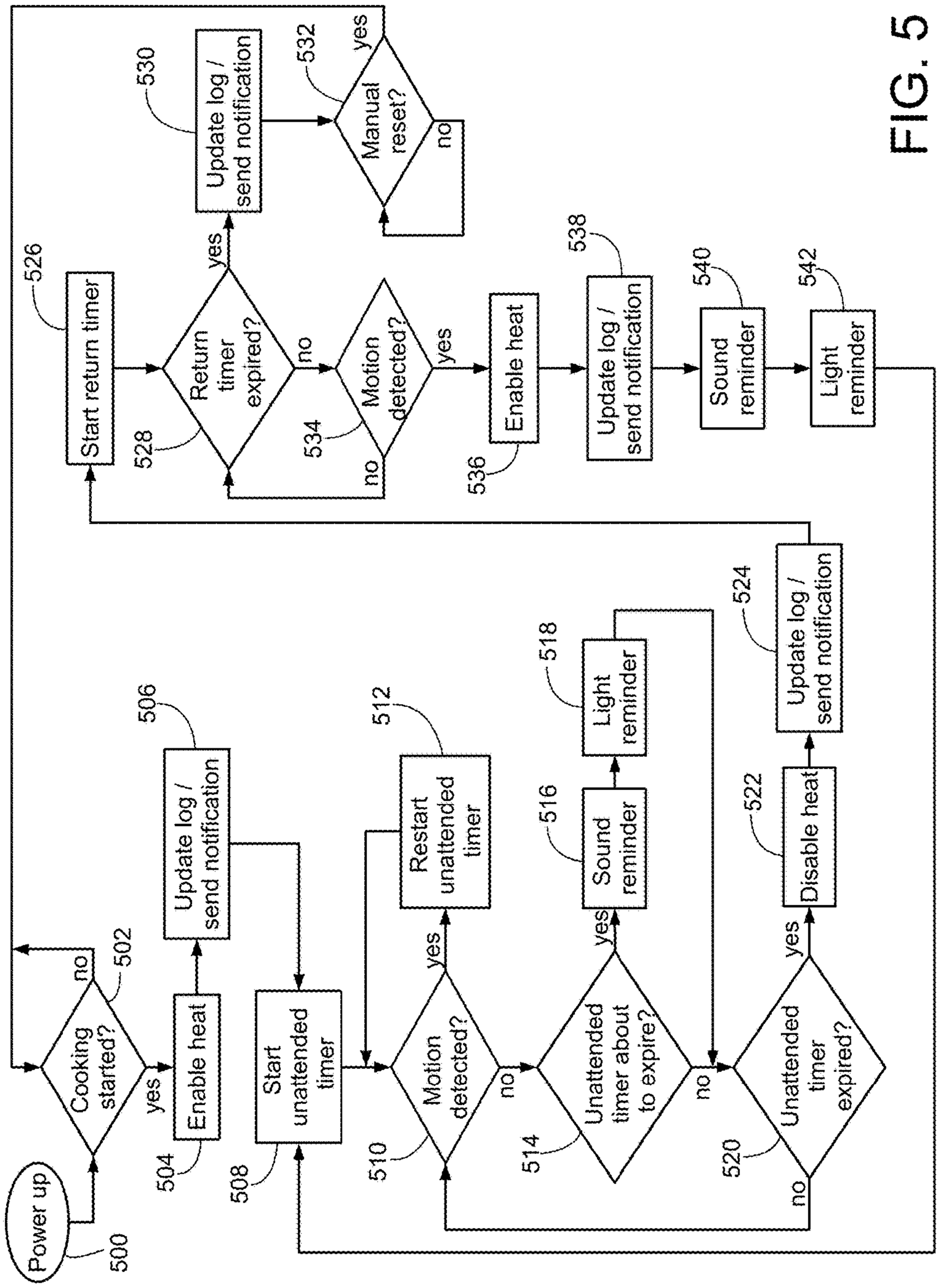

Power up
500
Cooking started?
502
no
yes
Enable heat
504
Update log / send notification
506
Start unattended timer
508
Motion detected?
510
yes
no
Restart unattended timer
512
Unattended timer about to expire?
514
yes
no
Sound reminder
516
Light reminder
518
Unattended timer expired?
520
yes
no
Disable heat
522
Update log / send notification
524
Start return timer
526
Return timer expired?
528
yes
no
Motion detected?
534
yes
no
Update log / send notification
530
Manual reset?
532
yes
no
Enable heat
536
Update log / send notification
538
Sound reminder
540
Light reminder
542

FIG. 5

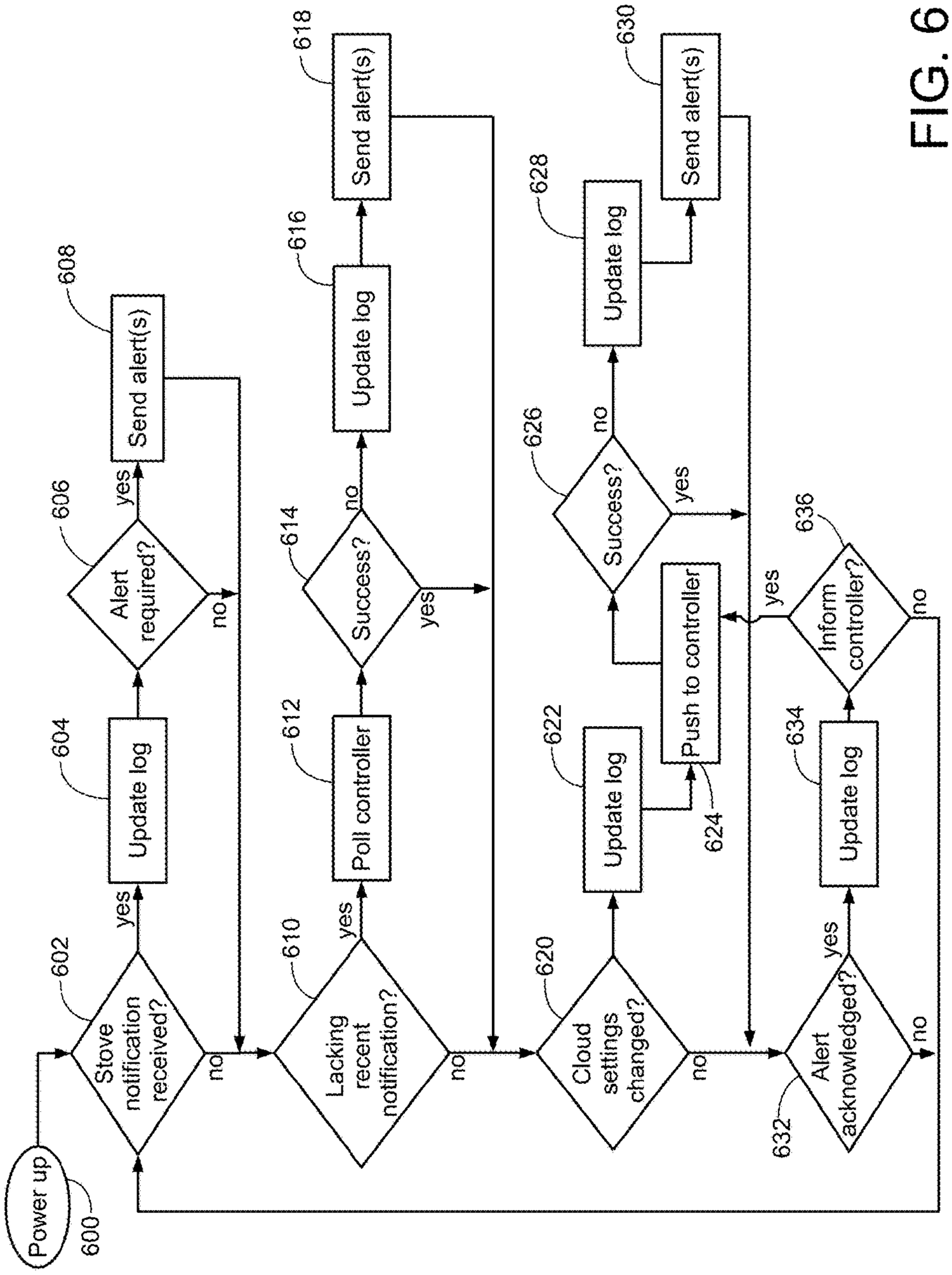

Power up
600
Stove notification received?
602
yes
Update log
604
Alert required?
606
yes
Send alert(s)
608
no
no
Lacking recent notification?
610
yes
Poll controller
612
Success?
614
no
Update log
616
yes
no
Cloud settings changed?
620
yes
Update log
622
Push to controller
624
Success?
626
no
Update log
628
yes
Send alert(s)
630
no
Alert acknowledged?
632
yes
Update log
634
Inform controller?
636
yes
no

FIG. 6

CONTROLLING HEAT CAPABILITY OF APPLIANCE ACCORDING TO USER PROXIMITY AND NOTIFYING REMOTE USERS VIA INTERNET FOR INCREASED SAFETY

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue; a claim printed with strikethrough indicates that the claim was canceled, disclaimed, or held invalid by a prior post-patent action or proceeding.

CROSS-REFERENCE TO RELATED APPLICATIONS

This application *is a reissue of U.S. Pat. No. 10,241,530, which issued Mar. 26, 2019 from U.S. patent application Ser. No. 15/486,493, filed Apr. 13, 2017, which* claims the benefit of priority of Canadian Patent Application No. 2,929,530 filed May 10, 2016, which is incorporated herein by reference.

BACKGROUND OF THE INVENTION

(1) Field of the Invention

The invention pertains generally to kitchen cooking appliances that generate heat such as stoves, ovens, cooktops, and ranges. More specifically, the invention relates to preventing fires and generally increasing safety by automatically enabling and disabling the ability of a cooking appliance to generate heat.

(2) Description of the Related Art

Common domestic stoves do not include many safety features. Typical electric burners and ovens continue generating heat indefinitely when turned on. Built in cook timers can be activated by the user to automatically shut off an oven after a desired bake time is reached, but such timers are effective as a rudimentary safety feature if and only if the user remembers to manually set the timer at the start of all cooking sessions.

Overcooked food will smoke or burn, and may lead to property damage, personal injury and even loss of life. Although kitchen safety is important for everyone, safety concerns are increased when the person operating the cooking appliance is prone to forgetfulness. For instance, a senior citizen living on their own may have onset dementia or other medical conditions that cause family members to question whether independent living is still appropriate. Often all parties involved may desire to keep the status quo because of the independence home cooking allows; however, the fact that ovens and stoves are dangerous when not properly operated is a legitimate worry.

Proposals have been made for systems which turn off a stove after a predetermined time in absence of operator activity in the vicinity of the stove. For instance, U.S. Pat. No. 6,130,413 issued Oct. 10, 2000 discloses a safety device utilized in conjunction with an existing cooking stove. While allowing continuous operation of an electric clock and other auxiliary functions of the stove, the safety device automatically shuts off the heating elements of the stove after a predetermined time of failing to detect the presence of a person in the vicinity of the stove.

BRIEF SUMMARY OF THE INVENTION

According to an exemplary embodiment of the invention there is disclosed a system, apparatus, and method of preventing fires and generally increasing safety by automatically enabling and disabling the ability of a cooking appliance to generate heat.

According to an exemplary embodiment of the invention there is disclosed a system for notifying remote users of lack of user presence around an appliance that is generating heat. The system includes a switch selectively limiting flow of a power source to the appliance according to a control signal, a controller coupled to the switch and generating the control signal, a sensor coupled to the controller and detecting presence of a user in a proximity of the appliance, and a network interface of the controller coupled to a computer network. The controller starts an unattended timer after heat generation is started by the appliance. The controller restarts the unattended timer each time the sensor detects the user is within the proximity of the appliance while heat generation by the appliance is enabled. In response to the unattended timer reaching a predetermined expiry duration while heat generation by the appliance is enabled, the controller controls the control signal to disable heat generation by the appliance and sends one or more alert notifications via the computer network.

According to another exemplary embodiment of the invention there is disclosed a method of notifying remote users of lack of user presence around an appliance that is generating heat. The method includes selectively limiting flow of a power source to the appliance according to a control signal, starting an unattended timer after heat generation is started by the appliance, and detecting presence of a user in a proximity of the appliance. The method further includes restarting the unattended timer each time the user is detected within the proximity of the appliance while heat generation by the appliance is enabled. In response to the unattended timer reaching a predetermined expiry duration while heat generation by the appliance is enabled, the method further includes controlling the control signal to disable heat generation by the appliance and sending one or more alert notifications via a computer network.

According to another exemplary embodiment of the invention there is disclosed a controller for notifying remote users of lack of user presence around an appliance that is generating heat. The controller includes one or more processors executing software instructions thereby causing the one or more processors to performs steps of starting an unattended timer after heat generation is started by the appliance, detecting presence of a user in a proximity of the appliance, and restarting the unattended timer each time the user is detected within the proximity of the appliance while heat generation by the appliance is enabled. In response to the unattended timer reaching a predetermined expiry duration while heat generation by the appliance is enabled, the one or more processors perform the steps of generating a control signal to disable heat generation by the appliance and sending one or more alert notifications via a computer network.

These and other advantages and embodiments of the present invention will no doubt become apparent to those of ordinary skill in the art after reading the following detailed

description of the preferred embodiment that is illustrated in the various figures and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be described in greater detail with reference to the accompanying drawings which represent preferred embodiments thereof:

FIG. **1** shows a block diagram of a system for automatically enabling and disabling the ability of cooking appliances to generate heat according to an exemplary embodiment of the invention.

FIG. **2** shows a block diagram of the controller in the second residence of FIG. **1**.

FIG. **3** is a diagram showing installation and hookup of components within the first residence of FIG. **1** where the range is electrically powered.

FIG. **4** shows the gas power switch of FIG. **1** utilized to control whether gas can flow from the gas source to the gas powered range in the second residence.

FIG. **5** shows a flowchart of operations performed by each of the controllers of FIG. **1**.

FIG. **6** shows a flowchart of operations performed by the cloud server of FIG. **1**.

DETAILED DESCRIPTION

FIG. **1** shows a block diagram of a system **100** for automatically enabling and disabling the ability of cooking appliances to generate heat according to an exemplary embodiment of the invention.

The system **100** includes an electric-powered cooking appliance such as an electric range **102** coupled to a power switch **104** and a controller **106** within a first residence **108**. The power switch **104** controls electrical power transfer from an electrical socket **110** to the range **102** according to control signals received from the controller **106**. The controller **106** includes an emergency button **112**, a primary motion sensor **114**, and a user interface (UI) including a screen **116** and a plurality of buttons **118**. The controller **106** further includes a wireless module that sends and receives wireless signals to/from an access point (AP) **120**, which may be a Wi-Fi router installed in the first residence **108**. One or more secondary motion sensors **122** are installed in other areas of the residence **108**, and a user device such as a mobile phone **124** is wirelessly coupled to the access point **120**.

A second residence **126** in this example includes a gas-powered cooking appliance such as a gas range **128**, and the gas range **128** is coupled to a power switch **130** and a controller **132**. In the second residence **126**, the power switch **130** controls gas flow from a gas source **134** to the range **128** according to control signals received from the controller **132**. The other components installed in the second residence **126** are similar to as previously described for the first residence **108** including one or more secondary motion sensors **136**, an access point (AP) **138**, and a user's mobile phone **140**. Likewise, the controller **132** in the second residence **126** includes each of the elements previously described for the controller **106** in the first residence including an emergency button **141**, a primary motion sensor **143**, and a user interface including a screen **145** and buttons **147**. Further, since the second residence **126** has a gas-powered range **128**, the controller **132** further includes an upper gas sensor **142**, and the gas power switch **130** in this configuration includes a lower gas sensor **144**.

The system **100** further includes one or more cloud servers **146** and remote user devices **148** coupled to the Internet **150**. In this embodiment, a single cloud server **152** is shown along with two remote user devices **148** including a laptop computer **154** and mobile phone **156**. It is to be understood that any number of cloud servers **146** and remote user devices **148** may be utilized with system **100** and the numbers of these devices **146**, **148** may dynamically change during operation.

FIG. **2** shows a block diagram of the controller **132** in the second residence **126** according to an exemplary embodiment. The controller **132** includes one or more processors **200** coupled to a storage device **202** and a plurality of communications interfaces **204**. In the following description, the singular form of the word "processor" will be utilized as it is common for an embedded CPU of a computing device to have a single processor **200** (sometimes also referred to as a core); however, it is to be understood that multiple processors **200** may also be configured to perform the described functionality of the controllers **106**, **132** in other implementations.

The storage device **202** stores software instructions **206** such as application programs for execution by the processor **200** along with data **208** utilized and created by the processor **200** while executing the software **200**. The communication interfaces **204** in this example include a proprietary interface **210** for transmitting and receiving signals between the power switch **130** and the controller **132**. The communication interfaces **204** further include a Wi-Fi interface **212** for wirelessly coupling the controller **132** to the access point **138**. In general, any desired communication interface(s) may be included for interfacing with the power switch **130** and/or external devices; examples of interfaces **204** include a local area network (LAN) interface **214** including wired Ethernet, a wide area network (WAN) interface **216** including global system for mobile communications (GSM) or other mobile data interfaces, and a personal area network (PAN) interface **218** including a Bluetooth module for communicating with devices in proximity to the controller **132** such as the user's mobile phone **140** and/or the secondary motion sensors **136**. The illustrated communication interfaces **204** are exemplary; in other embodiments, different interfaces **204** may be utilized as desired. For example, an X10 interface can be utilized to provide communication and control via the household power lines within a particular residence **108**, **126**.

The controller **132** also includes a clock chip **220** for tracking time, a speaker **222** for sounding audible reminders and warnings, a user interface (UI) **224** including the screen **145** and buttons **147** allowing a local user to interact with the controller **132**, a back light **226** allowing the user to see the UI **224** even in low light conditions, the primary motion sensor **143** for detecting motion in proximity to the controller **132**, a strobe light **228** for flashing visual reminders and warnings, a temperature sensor **139** for measuring ambient temperature, and the emergency button **141** allowing a local user to immediately shut off (and possible lock) the range **128** and send an alert indicating an emergency situation taking place within their residence **126**.

The above-described components of the controller **132** in the second residence **126** are also present in the controller **106** at the first residence **108** although some components may be different such as omitting the gas sensor **144** because the first residence **108** does not have a gas powered cooking appliance.

FIG. **3** is a diagram showing installation and hookup of components within the first residence **108** where the range

102 is electrically powered. As shown, the power switch **104** is plugged in to the electrical socket **110** in the kitchen wall, and the range **102** is in turn plugged in to a socket **303** provided on the power switch **104**. The power switch **104** further includes a communications port such as an Ethernet port **301** into which an Ethernet cable **300** is plugged in order to couple the power switch **104** to the controller **106**. The cable **300** transfers control signals from the controller **106** and an electrical relay within the power switch **104** selectively opens and closes according to the control signals. When the relay is set to a closed position, power is able to flow from the kitchen's power socket **110** to the heating elements of the electric range **102**; alternatively, when the relay is set to an open position, power is unable to flow from the power socket **110** to the heating elements of the electric range **102**.

The design of the power switch **104** may be based in part on the design disclosed in U.S. Pat. No. 6,130,413 issued Oct. 10, 2000, which is incorporated herein by reference. Following the techniques described in that patent document, an existing electric clock on the range **102** and other auxiliary electric functions are able to continue operation even when the power switch **104** has cut power to the heating elements according to the control signals received from the controller **106**.

The power switch **104** in this embodiment further includes one or more electrical current sensors to determine when a heating element of the range **102** has been turned on by a user. Current sensor signals indicating whether a heating element is drawing power are sent from the power switch **104** to the controller **106** via cable **300**.

Although an Ethernet cable **300** is utilized in this embodiment, the cable **300** is simply utilized to provide electrical connectivity between the power switch **104** and the controller **106**. The signals transferred do not need to follow the Ethernet standard; any suitable communication protocol and cable type may be utilized in other embodiments, for example, standards such as serial buses (RS-232), general purpose I/O, other protocols using a proprietary communication interface **210**, or standard communication interfaces **212**, **214**, **216**, **218**. Communication of electrical signals between devices is well known in the art so further description is omitted for brevity.

In this embodiment, the controller **106** is able to communicate signals via cable **300** causing the power switch **104** to open and close its internal relay, and the power switch **104** is able to communicate signals via cable **300** to indicate when power is flowing via power switch **104** due to a heating element of the range **102** being turned on.

In some embodiments, power to open and close the internal relay of the power switch **104** and to power the controller **106** is provided by the power socket **110**. Power can be sent from the power switch **104** to the controller **106** via cable **300**. In other embodiments, the controller **106** itself includes a power cable and adaptor **304** which is plugged in to another kitchen power outlet **302** as shown in FIG. **3**. In such embodiments, power to open and close the relay in the power switch **104** may be provided either by power socket **110** or power socket **302**.

FIG. **4** shows the gas power switch **130** utilized to control whether gas can flow from the gas source **134** to the gas powered range **128** in the second residence **126**. The gas power switch **130** includes a gas input port **400** for connection to the gas source **134**, a gas output port **402** for connection to the gas powered range **128**, and an Ethernet port **404** for receiving electrical power and/or control signals from the controller **132**. In response to the control signals, a solenoid **406** actuates in order to selectively allow or disallow gas to flow from the input port **400** to the output port **402**.

In some embodiments, the electrical power required by the gas power switch **130** such as to actuate the solenoid **406** is provided by the controller **132** via Ethernet cable **300**. Similar to as shown in FIG. **3**, a controller **132** coupled to a gas power switch **130** may include its own power cable and adaptor **304** to receive power from a kitchen electrical outlet **302**. In other embodiments, the gas powered switch **104** includes a power socket **408** and electrical power to actuate the solenoid of the gas power switch **104** and possibly for the controller **132** is provided by a power cable and adaptor **304** plugged in to a kitchen power outlet **302**. In such embodiments, electrical power can be transmitted from the gas powered switch **130** to the controller **132** via Ethernet cable **300** plugged into the Ethernet port **404**.

The gas power switch **130** further includes an air vent **407** allowing any leaked gas to be detected by the lower gas sensor **144**. When gas is detected by the gas sensor **144**, sensor signals are transmitted via Ethernet port **404** and cable **300** back to the controller **132**. Other sensors may also be installed in the gas power switch **130** such as gas flow sensors to detect when gas is flowing from the input port **400** to the output port **402**.

Both the electric power switch **104** and the gas power switch **130** may include one or more processors (not shown) in order to execute software instructions loaded from a storage device and cause the power switch **104**, **130** to perform the functionality described herein.

FIG. **5** shows a flowchart of operations performed by the controller **106**, **132** according to an exemplary embodiment of the invention. The steps of FIG. **5** are not restricted to the exact order shown, and, in other embodiments, shown steps may be omitted or other intermediate steps added. In this embodiment, the processor **200** of the controller **106**, **132** executes the software instructions **206** loaded from the storage device **202** in order to cause the controller **106**, **132** to perform the illustrated steps.

The process begins at step **500** when the controller **106**, **132** is powered up. In a preferred embodiment, the controller **106**, **132** stays in a standby mode with very low power draw until a cooking process is started by a user.

At step **502**, the processor **200** checks whether a cooking process has been initiated by the user. In some embodiments, a cooking process may be initiated by the user pressing a button **118**, **147** on the UI **224** labelled "Start cooking". In other embodiments, the processor **200** may automatically detect that the heating elements of the range **102** have been turned on **128**. For instance, the current sensors of the electric power switch **104** may notify the processor **200** that the electric stove **102** has been turned on. Likewise, gas flow sensors installed in the gas power switch **104** may notify the processor **200** that the gas powered stove **128** has been turned on.

At step **504**, the processor **200** sends control signals via cable **300** to the power switch **104**, **130** causing the power switch to enable the heating elements.

In some embodiments, a child safety setting is enabled by default where a user must first press a "Start cooking" button on the controller **106**, **132** before the heating elements are enabled on the range **102**, **128**. In such embodiments, the power switch **104**, **130** is kept in a default state by the controller **106**, **132** such that power to heat the heating elements cannot flow to the range **102**, **128**. For the electric power switch **104**, this means the internal relay is kept by default in a first position where electrical power is discon-

nected, and for the gas power switch **130** this means the solenoid is kept by default in a first position where gas flow is prevented. In response to the user pressing the "Start cooking" button, the processor **200** then enables heat at step **504** by toggling the position of the power switch **104**, **130** to enable either electric power or gas power to flow to the range **102**, **128**.

In other embodiments and situations, the power switch **104**, **130** may already be in a position such that electric or gas power can flow to the range at the time step **504** is reached. For example, when the child safety feature is disabled or not in use, the power switch **104**, **130** may by default be in a second position where power can flow to the range **102**, **128**. In this way, a user may turn on the stove or oven in the normal way without needing to take any additional action on the UI **224** of the controller **106**, **132**. In such a situation, the processor **200** will not actually need to take any specific action at step **504** to enable heat because heat was already enabled when this step **504** is reached.

In general, the processor **200** tracks the state of the power switch **104**, **130** and sends control signals to the power switch **104**, **130** at step **504** if necessary to enable heating functions on the range **102**, **128**.

At step **506**, the processor **200** updates a log stored in the data **208** of the storage device **202** to record that a cooking process was started along with the current time. The log records all activity detected by the controller **106**, **132** and is synchronized automatically with the cloud server **152**. The processor **200** also checks the data **208** to determine if a notification should be sent in real-time to the cloud server **152** when a cooking process is started. For instance, a family member or care taker may wish to be notified each time a cooking process is started and may configure the controller **106**, **132** to send a notification to one or more destinations each time a cooking process is started. More details on notifications and alerts are provided later in this document.

At step **508**, the processor **200** starts an unattended timer. The unattended timer in this embodiment is a countdown timer by default with an initial value of five minutes but can be user configured to any desired value within predetermined minimum and maximum allowed values (e.g., any value between zero and fifteen minutes). The unattended timer represents the maximum amount of time a user can leave the proximity of the range **102**, **104** before the controller **106**, **132** will automatically disable the heating functions of the range **102**, **104**.

At step **510**, the processor **200** determines whether motion has been detected by at least the primary motion detector **114**, **143**. The primary motion detector **114**, **143** will detect motion of the user in the proximity of the controller **106**, **132**. In some cases, the primary motion detector **114**, **143** will not be able to cover the entire kitchen region and one or more secondary motion detectors **122**, **136** may be installed to cover a different part of the kitchen and monitored by the processor **200** at step **510**.

At step **512**, since motion was detected at step **510**, the processor **200** resets the unattended timer back to its initial value (e.g., 5 minutes if the default value is utilized, or any other user-desired value).

At step **514**, the processor **200** determines whether the unattended timer is about to expire. For instance, if the timer is within thirty seconds of expiring (or within any other predetermined about-to-expire threshold), control will proceed to step **516**; otherwise, if the timer has already expired or is not yet within the expire threshold, control continues to step **520**.

At step **516**, the processor **200** plays a sound reminder on speaker **222**. The sound reminder may be a beep or other audible message reminding the user that they need to return to the kitchen. In some embodiments, a wireless speaker **228** may be installed in another area of the user's residence **108**, **126**. For example, a speaker **228** may be positioned in a basement or garage.

At step **518**, the processor **200** flashes a light reminder on the strobe light **228**. Similar to the sound reminder, the purpose of the light reminder is to remind the user to return to the kitchen. In some embodiments, a wireless strobe light **228** may be installed in another area of the user's residence **108**, **126**. For example, a strobe light **228** may be positioned in a living room over the television.

At step **520**, the processor **200** determines whether the unattended timer has already expired. The unattended timer will expire whenever no motion is detected for the entire countdown duration of the unattended timer. If the unattended timer has expired, control proceeds to step **522**; otherwise, control returns to step **510**.

At step **522**, because the unattended timer has now expired, the processor **200** disables the capability of the range **102**, **128** to generate heat. This is done by the processor **200** sending control signals via cable **300** to the power switch **104**, **130** causing the power switch **104**, **130** to cut off either the current flow or the gas flow as appropriate. Disabling heating functions may also include disabling other electrical functions on the cooking appliance **102**, **128** or may only involve disabling the capability of the heating elements to generate heat.

At step **524**, the processor **200** updates the log to record the fact that the heat was disabled as a result of the unattended timer expiring along with the current time. If notifications are enabled for this event, the processor **200** sends a notification to the cloud server **152**.

At step **526**, the processor **200** starts a return timer. The return timer in this embodiment is a countdown timer by default with an initial value of fifteen minutes but can be user configured to any desired value within predetermined minimum and maximum allowed values (e.g., any value between zero and thirty minutes). The return timer represents the maximum amount of time a user can return after an automatic shutoff event where the controller **106**, **132** will automatically re-enable the heating functions of the range **102**, **104**. In some embodiments, the processor may play audio and visual reminders on speaker **222**/strobe light **228** while the return timer is still running to try and signal the user to return to the kitchen.

At step **528**, the processor **200** determines whether the return timer has expired. The return timer will expire whenever no motion is detected for the entire countdown of the return timer. If the return timer expires it means the user both failed to return to the kitchen while the heating elements were activated (e.g., while the unattended timer was running, steps **508-520**) and further failed to return to the kitchen within a reasonable time after the heating elements were automatically disabled (e.g., while the return timer was running, steps **526-528**). When the return timer has expired, this likely means the user really did forget they were cooking or some other emergency event has occurred and control therefore proceeds to step **530** to lock the stove; otherwise, control continues to step **534** to give the user more time to return.

At step **530**, because the return timer has expired, the processor **200** updates the log to record this fact along with

the current time. If notifications are enabled for this event, the processor **200** sends a notification to the cloud server **152**.

At step **532**, the processor requires a manual reset procedure to be completed before the range **102**, **128** can be used to cook again. While at step **532**, the user is locked out from using the cooking functions of the range **102**, **128** until the reset procedure is performed. The reset procedure may involve the user simply pressing a "Reset" or other button on the UI **224** of the controller **106**, **132**. Pressing a button on the controller **106**, **132** means the user has returned to the kitchen and is trying to interact with the range **102**, **128**. A passkey or other predetermined sequence of keys may be required to ensure the user realizes they are performing a reset. In another embodiment, the manual reset procedure may involve a remote user reactivating the stove functionality such as via one of the remote user devices **148** communicating with the cloud server **146**, which can then send a reset signal down to the controller **106**, **132** via the Internet **150** in order to satisfy the manual reset requirement of step **532**. Combinations of local and remote resets may also be required. For instance, a family member may need to perform a reset on a remote user device **148** in addition to the user being required to perform a manual reset on the UI **224** of the controller **106**, **132**. When the reset procedure has been successfully completed, control returns to step **502** to allow another cooking process to be started.

At step **534**, the processor **200** determines whether motion has been detected by at least the primary motion detector **114**, **143**. The primary motion detector **114**, **143** will detect motion of the user in the proximity of the controller **106**, **132**. In some cases, the primary motion detector **114**, **143** will not be able to cover the entire kitchen region and one or more secondary motion detectors **122**, **136** may be installed and monitored by the processor **200** at step **534**.

At step **536**, because the user has returned to the kitchen before the return timer has expired, the controller **106** automatically re-enables the heating function of the range **102**, **128**. This is done by the processor **200** sending control signals via cable **300** to the power switch **104**, **130** causing the power switch to enable the heating elements.

At step **538**, the processor **200** updates the log to record that the user returned during the return timer along with the current time. If notifications are enabled for this event, the processor **200** sends a notification to the cloud server **152**.

At step **540**, the processor **200** plays a sound on speaker **222** to remind the user that the heat has been automatically re-enabled.

At step **542**, the processor **200** flashes a light on strobe **228** to remind the user that the heat has been automatically re-enabled. The UI **224** also displays a message on the screen indicating the action that is currently taking place such as "Turning stove on". Control then returns to step **508** to start the unattended timer and continue the process from that point in the flowchart as already described.

FIG. **6** shows a flowchart of operations performed by the cloud server **152** according to an exemplary embodiment of the invention. The steps of FIG. **6** are not restricted to the exact order shown, and, in other embodiments, shown steps may be omitted or other intermediate steps added. In this embodiment, one or more processors of the cloud server **152** execute software instructions loaded from a storage device with the computer server **152** in order to cause the server **152** to perform the illustrated steps.

The process begins at step **600** when the cloud server **152** is powered up.

At step **602**, the server **152** determines whether a new stove notification from a controller **106**, **132** has been received. Stove notifications correspond to the notifications sent at any of steps **506**, **524**, **530**, **538** of FIG. **5**. Other notifications may be sent by the controller **106**, **132** to the cloud server. For instance, a notification may be sent when the emergency button **112**, **141** on the controller **106**, **132** is pressed, gas sensors **142**, **144** detect gas leaks, temperature sensor **139** detects an extreme temperature, water sensor detects a flood, smoke detector detects smoke, carbon monoxide detector detects carbon monoxide, etc. Additionally, notifications received from stoves may also include log synchronization messages and general heartbeat messages to ensure that communications from the controller **106**, **132** to the server **152** are still working.

At step **604**, the server **152** updates a central log stored at the cloud server **152** according to the new stove notification. The central log stores events and times of the events as reported by the controller **106**, **132** along with their associated controller identifier. In this way, the cloud server **152** can track and control a plurality of controllers **106**, **132** perhaps owned and/or operated by different users in different residences **108**, **126**. The server **152** maintains privacy between the log data and control functions between different users' data stored on the cloud server **152**.

At step **606**, the server **152** determines whether one or more alerts messages should be sent according to the new stove notification. Each user and/or care provider associated with a user may set up email or short message service (SMS) alerts for any particular event. Other types of alerts may be utilized in other embodiments; for example, a software application running on user devices **148** may receive push notifications from the cloud server **152**.

At step **608**, the server **152** sends the one or more alerts required in response to the new stove notification. For instance, when the server **152** receives a notification from the controller **106** in the first residence **108** indicating that a user has pressed the emergency button **112**, the server **152** may immediately send an SMS and email alert to a phone number and email address pre-configured at the server **152** for the user associated with the controller **106** from which the notification was received.

At step **610**, the server **152** determines whether one of more controller **106**, **132** have failed to provide a recent notification message.

At step **612**, the server **152** attempts to poll the controller **106**, **132** from which recent notifications are lacking to ensure communications with that controller **106**, **132** are still possible.

At step **614**, the server **152** determines whether communications were successfully established with the controller **106**, **132** from which recent notifications are lacking.

At step **616**, when the server **152** is unable to reach the missing controller **106**, **132**, the server **152** updates the cloud log to record this fact along with the current time.

At step **618**, the server **152** sends one or more alerts to designated individuals to inform them of the communication problem.

At step **620**, the server **152** determines whether cloud settings for a particular have changed. Cloud settings may include preprogrammed time-based and on-demand lockouts when a particular user should not be cooking, specific timer values for the unattended timer and return timer, default child lock settings etc.

At step **622**, the server **152** updates the cloud log to record the changes along with the current time and a user identifier specifying who made the change.

At step **624**, the server **152** pushes the changed settings to the controller **106**, **132** associated with the changed settings. For instance, if the change pertains to the user in the first residence **108**, the server **152** sends the changed settings down to the controller **106** in the first residence **108**.

At step **626**, the server **152** determines whether the settings were successfully pushed to the controller **106**, **132**.

At step **628**, the server **152** updates the cloud log to record the fact that the changes were not successfully pushed to the controller **106**, **132**.

At step **630**, the server **152** sends one or more alerts to designated individuals to inform them of the communication problem.

At step **632**, the server **152** determines whether it has received an alert acknowledgement message from one of the user devices **124**, **140**, **148**. Alert acknowledgement messages may be required to ensure that the designated person has actually received the alert. For instance, if the server **152** sends an alert to a mobile phone **156** indicating that the emergency button **112** has been pressed in the first residence **108**, the server **152** may expect to receive back a message from mobile phone **156** indicating that the alert has been acknowledged. This may be done by the user of mobile phone **156** replying to the alert, either email or SMS with a message such as "ACK". Other desired acknowledgement mechanisms can be utilized such as pressing a particular onscreen button displayed in a custom application running on the remote user device **1148**. If no alert acknowledgement is received within a predetermined time duration after the alert was sent, the server **152** may automatically send a failsafe alert to another recipient such as a facility manager or emergency services.

At step **634**, the server **152** updates the cloud log to record the fact that the alert was acknowledged along with the current time and a user identifier representing the user who acknowledged the alert.

At step **636**, the server **152** determines whether the controller **106**, **132** to which the alert pertains should be informed of the acknowledgement. For instance, after the emergency button **112** has been pressed, the controller **106** may display a message such as "Alert sent" on the UI **224**. Then, after the alert has been acknowledged by a caretaker or family member, the controller **106** will receive a message from the cloud server **152** informing of the acknowledgement. In response, the controller **106** displays a message such as "Alert acknowledged" on the UI **224**. This way, the user in the kitchen knows that help is on the way. In some embodiments, if certain alerts are not acknowledged after a predetermined time period, the controller **106**, **132** may resend a notification to the server **152** or may revert to directly sending alerts directly to the same or different designated individuals. When the controller **106**, **132** should be informed of the acknowledgement, control proceeds to step **624** to push the acknowledgement to the controller **106**, **132**; alternatively, when there is no need to inform the controller **106**, **132**, control returns to step **602** to restart the loop checking for events at the server.

In an exemplary embodiment, a stove controller starts an unattended timer when a cooking process is started. The controller monitors whether motion is detected in the kitchen prior to the unattended timer expiring and resets the unattended timer each time motion is detected. If the unattended timer expires without any motion being detected, the controller disables the heating elements of the stove and starts a return timer. The controller monitors whether motion is detected in the kitchen prior to the return timer expiring. When motion is detected, the controller automatically re-enables the heating elements of the stove so that cooking can continue. If motion is not detected and the return timer expires, the controller locks the stove until a reset procedure is performed. Alerts of the stove activity are sent to external devices over the Internet, and the reset procedure may be performed on the controller or on one of the external devices.

In other embodiments one or both of the unattended timer and/or return timer can be unused or deactivated by setting its initial value to zero (or a low value such as five to ten seconds). For instance, if the unattended timer is started with a value of zero, then the user's presence is always required to be detected in the kitchen at step **510** or the timer will immediately expire at step **520**. In this way, the user is not permitted to leave the kitchen during cooking or the stove will immediately shut off. Likewise, if the return timer is started with a value of zero, then the heating will never be automatically re-enabled after it was automatically disabled at step **522**. In this way, once a user leaves long enough to cause the controller **106**, **132** to disable heat at step **522**, the manual reset procedure at step **523** will need to be performed before the stove can be used for cooking again. Either, both, or neither of the unattended timer and/or return timer can be set with an initial value of zero and as previously mentioned the initial value can be a user configurable setting so may differ at different times and/or for different users.

Rather than detecting motion at steps **510** and/or step **524** to detect the user's presence in the kitchen, other activity or sensor signals can be detected instead. For instance, proximity of a user's mobile phone **124**, **140** or other electronic device may be utilized instead of motion. This may be beneficial if the user is in a care facility and wears an RFID bracelet or other identifier. The motion sensor **114**, **143** in the controller **106**, **132** may be replaced with an RFID sensor and steps **510**, **524** are modified such that the processor **200** checks whether the RFID bracelet is detected by the RFID sensor in the kitchen. In yet another example, there may be an "I'm here" button **118**, **147** on the faceplate of the controller **106**, **132** that the user must physically push. Pushing of the button ensures the user has returned to the kitchen and takes the place of detecting motion. Likewise, rather than a physical button on the controller **106**, **132**, a virtual "I'm here" button may be provided on an app running on the user's mobile phone **124**, **140** or other device within the residence **108**, **126**. The app may only allow the user to push the button when in close proximity to the controller **106**, **132** (i.e., the user is within the kitchen). Heat sensors, infrared sensors, floor pressure sensors, laser/light emitting diode (LED) beam break sensors, or other sensors may be utilized to detect a user's presence in the kitchen in other embodiments.

In general, all the UI functions can be local to the controller **108**, **126** such as physical buttons **118**, **147** and screen **116**, **145** on the controllers **106**, **132**, and/or may also be remotely displayed and even controlled on one or more user devices such as mobile phones **124**, **140**, **156** and computers **154**. User authentication such as login procedures may be employed in known manners to ensure that user security is ensured.

The unattended timer and/or return timer functionality may be temporarily disabled for cooking certain meals such as roasts where the cook times are known in advance to exceed these timer settings. The override may be performed by entering a code or other combination of menu options on the UI **224** on the controller **106**, **132**. Alternatively, the override functionality may be activated via a user logging in to the system **100** via either on onsite user device **124** and/or

a remote user device **148**. Family members or caregivers may need to confirm or otherwise give permission via the cloud server **152** in order to allow the user within the kitchen to disable the unattended/return timer(s).

The emergency button **112**, **141** may be configured to shut off the cooking appliance **102**, **128** by sending control signals to the power switch **104**, **130** immediately causing the power switch **104**, **130** to prevent power (either gas or electric) from flowing to the heating element(s) of the cooking appliance **102**, **128**. The emergency button **112**, **141** may also be configured to send alerts to the server **152** or one or more user devices **124**, **126**, **154**, **156** via the Internet **150**. Even if the range **102**, **128** is not currently in use at the time the emergency button **112**, **141** is pressed, the controller **106**, **141** will preferable still send any configured alerts to the predetermined destinations. In this way, the emergency button can alert family members or caregivers to non-cooking related emergencies occurring within the residence **108**, **126**. For example, the user may be feeling faint and press the emergency to summon assistance.

For the various connected devices of system **100** including the controllers **116**, **132** and various user devices **124**, **140**, **154**, **156**, any desired connection mechanism to the Internet **150** may be employed in different embodiments. Examples include Wi-Fi and access points **120**, **138** as shown in FIG. **1**, but also such as long-term evolution (LTE) provided by a cell base station **158** and other high-speed data options both wired and wireless. For example, the controller **106**, **132** may communicate with the cloud servers **146** via cell tower **158** and thereby prevent the need to install an access point **120**, **138** within the user's residence.

Other types of notifications messages and log data may be sent from the controller **106**, **132** to the cloud server **152** informing the server **152** of any desired events detected within the residence **102**. For instance, the lower gas sensor **144** may detect heavy gases such as propane indicating a gas leak or other problem with gas installation of the gas power switch **130** to the gas source **134**. In response to gas sensor signals indicating the presence of gas, the controller **132** may be operable to automatically lock out the cooking functions of the gas range **128** and immediately send one or more notification messages to the cloud server **152** or other user devices **124**, **140**, **154**, **156** to summon assistance. Likewise, if the upper gas sensor **142** detects lighter gases from the burners, a similar process may occur to shut off the stove heating functions and send notification via the Internet **150**. In both gases, if the gas dissipates and is no longer detected by the gas sensor **142**, **144**, the controller **132** may automatically reset the lock on the power switch **104**, **130** so that the gas range **128** may utilized for cooking again. Visual messages may be presented on the screen **145** so that the user knows that gas was present. In other embodiments, upon the gas dissipating, the stove may display the message informing the user but also enter state **532** of the flowchart of FIG. **5** so that the user must manually perform a manual reset procedure before another cooking process can be started. In yet other embodiments, whether a manual reset is required may depend on which of the upper or lower gas sensors **142**, **144** detected the gas. Lower gas may be deemed more serious such as a pipe leak and therefore require a manual reset or other special code by a technician after repair is completed while upper gas may be deemed less serious and be automatically reset by the controller **132** a predetermined duration after the gas is no longer detected by the upper gas sensor **142**.

The upper and lower gas sensors **142**, **144** may be calibrated by to a normal base value by utilizing a menu function of the UI **224** on the controller **132**. The calibration procedure is performed when no gas leak is present such as immediately after installation when confirmed by a technician. The baseline sensor values measured when no leak is present are recorded by the controller **132** and stored in the storage device **202**. During normal operation thereafter, if the controller **132** detects gas sensor values that significantly differ from the baseline values (e.g., exceed one or more of the baseline values by a predetermined amount) then the controller **132** will deactivate the heating functions on the gas powered cooking appliance **128** and send out the notifications as preconfigured depending on the user settings.

In yet other embodiments, the cloud server **152** is not utilized and the controllers **106**, **132** operate in a standalone mode without cloud support. For instance, the process described in FIG. **5** may still be performed by an individual controller except for the steps related to sending alerts to the cloud server **152**. For standalone controllers **106**, **132**, the one or more of the communication interfaces **204** may be omitted to thereby lower the cost of the unit. Alternatively, the communication interfaces **204** may still be included but just not utilized thereby allowing the user to "upgrade" their controller to an Internet connected controller **106**, **132** at a future time. As such, during standalone operation the notification steps of FIG. **5** may be omitted such that the controller **106**, **132** does not send any notifications or alerts; alternatively, these steps may be modified such that the controller **106**, **132** itself directly sends email and/or SMS (or other) alerts to intended destinations. Having the cloud server **152** be primary recipient of notification sent by the controller **106**, **132** is beneficial to allow other family members and caretakers to monitor the situation within the residence; however, similar goals can be achieved with or without a cloud server **152** in other embodiments. For instance, remote user devices **148** may directly communicate over the Internet **150** with controllers **106**, **132** in particular residences **108**, **126** to both receive notification messages and/or or poll or read the usage log from stored in the data **208** of the storage device **202**.

Other user-specific settings may also be stored in the data **208** of the storage device **202** of each controller **106**, **132**. For instance, one or more time-based lockout settings may be configured for a particular controller **106**, **132**. A time-based lockout setting specifies a disable time range during which cooking is not permitted. The controller **106**, **132** monitors the current time using clock chip **220** and will not allow any new cooking processes to start during the disable time range. For example, cooking may be prevented during late night hours from midnight to 5 am. Alternatively, one or more time-based allow settings may be configured for a particular controller **106**, **132**. A time-based allow setting specifies an allowed time range during which cooking is permitted. The controller **106**, **132** monitors the current time using clock chip **220** and will only allow new cooking processes to start during the allowed time range. For example, cooking me be allowed only during a four-hour window from 10 am to 2 pm. Any combination of time-based settings may be dynamically configured for a particular user's controller **106**, **132**, and different time-based settings may apply on different days or specific dates or for different users.

Other types of lockout and allow settings other than time-based settings may be utilized. For example, on-demand settings (either lock or allow) may be initiated at any time and stay in effect until canceled or any other predetermined end duration. This may be beneficial if cooking is only permitted by a particular user when a care taker is

present in the user's residence **108**, **126**. The controller **106**, **132** is configured by default to disable cooking function on the range **102**, **128**. When the caretaker arrives, the caretaker manually activates the on-demand allow function, or the controller **106**, **132** automatically detects the presence of the caretaker such by proximity of the caretaker's mobile phone **124**, **140** and activates the on-demand allow function. Likewise, when the caretaker leaves the residence **108**, **126**, either the caretaker manually disables the on-demand allow function or the controller **106**, **132** automatically cancels it. The on-demand settings (either lock and/or allow) may have a built-in expiry time duration such that, if they are not manually canceled within a predetermined or user-specified X minutes, the controller **106**, **132** will automatically cancel the on-demand setting. In another example, a remote user may be able to shut off the heat and lock the cooking appliance at any time by activating a remote shut-off via any authorized remote user device **148**.

On-demand settings may also be activated and deactivated using unlabeled or otherwise obfuscated UI buttons **118**, **147**. For example, the controller **106**, **132** may be configured such that an on-demand lock out setting is activated when the "Menu" button is held down for five seconds. Unlock may be performed in a similar manner by holding down the same button for five seconds. In this way, if a care taker wants to step out of the residence for a moment they may easily deactivate the cooking appliance **106**, **132** and then re-enable it when they come back. Such on-demand settings may take preference over time-based settings such that the cooking appliance **102**, **128** could be locked or allowed even while the current time is within a time frame with the opposite setting. All combinations and permutations of these user-specific settings may be permitted and be dynamically set by users, caretakers, and/or family members as desired.

Other methods to activate and deactivate on-demand settings include entering personal identification identifiers (PINs) on the controller UI **224**, using pre-authorized apps on mobile phones or other user devices **124**, **140**, **154**, **156** that are associated with the controller **106**, **132**, toggling settings via cloud server **146**, physical keys inserted into the controller **106**, **132**, Bluetooth pairing to specific mobile devices **124**, **140** in proximity causing automated activating and deactivation, passwords, etc. A reset pin may be included in the back of the controller into which a pen, paperclip, or other device can be inserted and held for five seconds to reset the unit back to its default state. This may be beneficial if a caretaker sets a particular password required to enable heating functions and is later discharged by family members. The family members can reset the unit to clear out the unknown password.

Another user-specific setting that may be preprogrammed by users is the default cook timer setting. Similar to how the unattended timer setting is automatically started at step **508**, each time a cooking operating is initiated, the default cook timer may also be started by the controller **106**, **132** at step **508**. Unlike the unattended timer setting, the default cook timer is not automatically reset at any time during the cooking process and does not depend upon motion or other external inputs. Instead, the controller **106**, **132** simply automatically disables the heating functionally of the cooking appliance when the default cook timer setting expires. In this way, the default cook timer acts as a failsafe mechanism suitable for a forgetful person who may still be in the kitchen. For example, a particular user may always cook a meal that requires fifteen minutes of bake time. The user may simply press the start cook button and the default cook timer will ensure that the oven shuts off after fifteen minutes even if the user never leaves the kitchen. The default cook timer is similar to a regular oven's bake timer, except the timer value has a preset, user-programmed default setting and is automatically activated by the controller **106**, **132** for all cooking processes.

In other embodiments, the user may need to press a "Timed bake" or similar button to activate the default cook timer rather than the controller **106**, **132** automatically activating it for all cooking. This is similar to a regular oven's bake timer, except the timer has a preprogrammed default time value. This may be beneficial for an elderly person who finds it difficult to repeatedly press multiple buttons in order to setup a same bake time of fifteen minutes every time they cook their lunch, for example.

The various user-specific settings for a particular controller **106**, **132** may be added or changed at any time utilizing the onscreen UI **224**, via an application or web interface running on a user device **124**, **140** connected with the controller **106**, **132**, or by an application or web interface running on a remote user device **148** connected with the cloud server **152**. When cloud based settings are applied, a user may first make a settings change on the cloud server **152** and then the server **152** pushes the new settings down to the appropriate controller **106**, **132** (e.g., see step **624**) of FIG. **6**. This may happen in real time or at designated intervals such as every thirty minutes. Alternatively, a controller **106**, **132** may poll the server **152** at specific intervals such as every thirty minutes to check for new settings.

Each controller **106**, **132** may have a sticker attached during manufacture that specifies the media access control (MAC) address of the controller **106**, **132** along with a security code such as a random five-digit number. The list of MAC addresses and corresponding security codes assigned during manufacture are stored on the cloud server **152** and utilized by the cloud server **152** as a verification tool. When adding a controller **106**, **132** to the user's cloud account on cloud server **146**, the user is required to input both the MAC address along with the security code printed on the label affixed to the controller **106**, **132**. The cloud server **152** then verifies that the security code entered by the user matches the security code associated with the MAC address at the time of manufacture. If there is a match then this means the user is in physical possession of or proximity to that particular controller **106**, **132**. The server **152** therefore presumes the user to be a valid user of the particular controller **106**, **132**. Other security checks may also be performed such as verifying the name, phone number, or other details of the purchaser of the specific controller **106**, **132** stored on the cloud server **152** in a similar manner. Performing one or more security checks before allowing a user to add a controller **106**, **132** to their cloud account helps ensure user security by making it difficult to add an incorrect controller **106**, **132** to a particular user's cloud account.

The cloud accounts on the cloud server **152** may allow a single user to add multiple controllers **106**, **132** and then either track the user log and/or control the user-specific settings for those controllers **106**, **132**. Adding multiple controllers **106**, **132** to a single user's cloud account may be beneficial for a care provider responsible for the monitoring a plurality of users, each with their own kitchen. Likewise, a single controller **106**, **132** may be added to multiple cloud accounts. This may be beneficial when several family members all want to monitor and possibly change controller log data **208** and settings for the controller **106**, **132** in the residence **108**, **126** of a particular elder relative, for example. Different user permissions may be established at the cloud

server **152** where some users can only monitor log data and receive alerts but cannot make any changes such as setting up new time zones are configuring alert destinations. Other users may be able to make these changes. User permissions may be beneficial when care of a particular person is handled by a care provider but family members of that particular person still want to monitor log data **208** and receive alerts. The care provider may have admin privileges on the cloud server **152** for the controller **106**, **132** installed in the particular person's residence **108**, **126** while the family members may only have viewer privileges for that same controller **106**, **132**.

User reporting and administrative schedules may be set up in the cloud server **152** such that a first user device **124**, **140**, **148** receives alerts for a particular controller **106**, **132** during a first time period or other date/time range, and a second, different user device **124**, **140**, **148** receives alerts for the particular controller **106**, **132** during a second, different time period or date/time range. This may be beneficial to cause nightshift staff of a care facility to receive alerts during the night while dayshift staff receive the alerts during the day. The recipient phone number and/or email address for each time of alerts and timeframe (if desired) may be different for different types of alerts.

For safety, if someone tampers with the network cable **300**, the power switch **104**, **130** is operable to immediately return to the lock position such that power (either gas or electric) cannot flow to the heating elements of the cooking appliance. In this way, cooking is not possible if the controller **106**, **132** is not properly connected and in communication with the power switch **104**, **130**. An alert may be sent from the controller **106**, **132** to the cloud server **152** or one or more user devices **124**, **140**, **148** in this situation.

The motion sensors **114**, **122**, **143**, **136** may also be monitored by the controller **106**, **132** outside of cooking processes in order to detect motion with the residence **108**, **126** as an additional safety feature. Records of detected motion may be stored in the log data **208** and viewed by family members. Notifications may be sent by the controller **106**, **132** to the cloud server **152** (or other user devices **124**, **140**, **148**) in the event no motion is detected for a predetermined period such as twelve hours. This may be beneficial to ensure the safety by notifying family members or a caretaker if a particular user has not been up and about within their residence **108**, **126** for over twelve hours. The specific time duration and whether this feature is activated can be user configurable settings. When utilized for this purpose, the secondary motion sensors **122**, **136** can be placed in other high traffic areas around the residence **108**, **126**. The UI **224** and/or cloud server **152** user interface allows specifying which of the secondary motion sensors **122**, **136** are outside of the kitchen so that they are not utilized to reset or stop the unattended timer or return timer at steps **510** and **534** of FIG. **5**.

In another example, the controller **106**, **132** may monitor **40** at least the primary motion sensor **144**, **143** and turn on the backlight **226** whenever motion is detected. In this way, the backlight **226** may operate as an automated night light providing ambient light at night when someone enters the kitchen.

In yet another example, the controller **106**, **132** continuously monitors the temperature sensor **139** in order to detect ambient temperatures outside a normal range. In the event of an unsafe cooking process, the ambient temperature measured by the temperature sensor **139** will exceed a predetermined high threshold. In response, the controller may disable heat on the cooking appliance and send a notification to the cloud server **152** and/or one or more user devices **124**, **140**, **148**. Alternately, in the event of a furnace failure within the user's residence during winter months, the ambient temperature measured by the temperature sensor **139** will exceed a predetermined low threshold. In response, the controller will send a notification to the cloud server **152** and/or one or more user devices **124**, **140**, **148**. Other sensors may also be included within the controller **106**, **132** and monitored in a similar manner. For instance, the processor **200** of the controller **106**, **132** may be coupled to one or more of an infrared heat detector, a carbon monoxide detector, a smoke detector, an ultraviolet flame detector, a water detector, etc. In the event of abnormal readings detected by any of the sensors, the controller **106**, **132** is operable to perform a preconfigured operation such as shutting of the heat and/or sending one or more notifications/alerts to the cloud server **152** or another remote device **124**, **140**, **148**.

The UI **224** may include a QWERTY keyboard, touch screen, and/or numerical screen. Likewise, the menu system may provide quick access to common functions related to cooking such as metric to imperial units conversion and recipes.

Although the invention has been described in connection with preferred embodiments, it should be understood that various modifications, additions and alterations may be made to the invention by one skilled in the art without departing from the spirit and scope of the invention. For example, although the above description has focused on stoves and residential applications for illustration purposes, the present invention is equally applicable to any appliance generating heat in both domestic and commercial applications. Examples include factory burners, soldering irons, kettles, irons, etc. Similar techniques can also be utilized with other devices that are not directly for generating heat but that may get hot over time if forgotten such as motors, garbage compactors, televisions, etc.

Rather than having a separate controller **106**, **132** and power switch **104**, **130** located in separate boxes that are installed in the kitchen, these devices **106**, **132**, **104**, **130** may be integrated with the cooking appliance itself. For instance, an electric range **102** may include an integrated controller **106** and power switch **104**. Likewise, a gas range **128** may include an integrated controller **132** and gas power switch **130**.

In other configurations, above-described units may be multiplied. For instance, a single controller **106**, **132** may be coupled to and control a plurality of power switches **104**, **130**. Taking the first residence **108** as an example, the controller **106** may be coupled to a first power switch **104** for enabling and disabling the heat on the range **102** as shown in FIG. **1**, and the controller **106** may also be coupled to one or more additional power switches (not shown) enabling and disabling the heat on one or more additional cooking appliances such as toasters, toaster ovens, and microwaves within the kitchen. Each of the power switches **104** may be coupled to the controller **106** using any available communication interface **204** including both wired and wireless. The X10 protocol utilizing power line wiring for signaling and control may also be utilized to couple one or more of the power switches to the controller **106**. When the controller **106** enables heat at steps **504**/**536** and/or disables heat at steps **522** of FIG. **5**, all of the power switches **104** for each of the various cooking appliances in the kitchen receive the control signals from the controller **106**. In this way, multiple cooking appliances can be turned on and off in tandem all controlled by a single controller **106**, **132**. Some of the

power switches coupled to a particular controller **106**, **132** may be electrical power switches **104** and some may be gas power switches **130**.

Above-described functionality such as the flowcharts and operational description may be achieved by one or more processors **200** operating pursuant to instructions stored on a tangible, non-transitory computer-readable medium such as a storage device **202** to perform the above-described functions. Examples of the computer-readable medium include optical media (e.g., CD-ROM, DVD discs), magnetic media (e.g., hard drives, diskettes), and other electronically readable media such as flash storage devices and memory devices (e.g., RAM, ROM). The computer-readable medium may be local to the computer executing the instructions, or may be remote to this computer such as when coupled to the computer via a computer network such as the Internet **150**. The processors **200** may be included in a general-purpose or specific-purpose computer that becomes the controller **106**, **132** or any of the above-described devices such as cloud servers **146**, user devices **124**, **140**, **148**, and power switches **104**, **130** as a result of executing the instructions.

In other embodiments, rather than being software modules executed by one or more processors, the devices may be implemented as hardware circuits configured to perform the above-described functions. Examples of hardware circuits include combinations of logic gates, integrated circuits, field programmable gate arrays, and application specific integrated circuits (ASICs), and other analog and digital circuit designs.

Functions of single devices may be separated into multiple units, or the functions of multiple devices may be combined into a single unit. Unless otherwise specified, features described may be implemented in hardware or software according to different design requirements. In addition to a dedicated physical computing device, the word "server" may also mean a service daemon on a single computer, virtual computer, or shared physical computer or computers, for example.

All combinations and permutations of the above described features and embodiments may be utilized in conjunction with the invention.

What is claimed is:

1. A system for notifying remote users of lack of user presence around an appliance that is generating heat, the system comprising:

a switch selectively limiting flow of a power source to the appliance according to a control signal;

a controller coupled to the switch and generating the control signal;

a sensor coupled to the controller and detecting presence of a user in a proximity of the appliance; and

a network interface of the controller coupled to a computer network;

wherein the controller starts an unattended timer after heat generation is started by the appliance;

the controller restarts the unattended timer each time the sensor detects the user is within the proximity of the appliance while heat generation by the appliance is enabled;

in response to the unattended timer reaching a predetermined expiry duration while heat generation by the appliance is enabled, the controller controls the control signal to disable heat generation by the appliance and sends one or more alert notifications via the computer network;

wherein the controller starts a return timer after heat generation is disabled by the appliance;

in response to the sensor detecting the user is within the proximity of the appliance prior to return timer reaching a predetermined expiry duration, the controller controls the control signal to re-enable heat generation by the appliance and send one or more alert notifications via the computer network; and

in response to the sensor not detecting the user is within the proximity of the appliance prior to return timer reaching a predetermined expiry duration, controls the control signal to reenable heat generation by the appliance only in response to receiving a reset signal via the computer network.

2. The system of claim **1**, wherein the predetermined expiry duration is dynamically changeable according to one or more configuration messages received by the controller via the computer network.

3. The system of claim **1**, further comprising:

a server coupled to the controller via the computer network;

wherein the controller sends the one or more alert notifications to the server; and

in response to receiving the one or more alert notifications from the controller, the server determines a user device associated with the controller and sends one or more alert messages to the user device.

4. The system of claim **3**, wherein:

in response to the server receiving the one or more alert notifications from the controller, the server selects the user device from a plurality of user devices associated with the controller according to a current date/time when the alert notification is received; and

the user device selected is a particular one of the user devices designated to receive alerts associated with the controller during a date/time range that includes the current data/time when the alert notification is received.

5. The system of claim **1**, wherein:

the power switch includes a flow sensor that generates a start signal in response to the flow sensor detecting heat generation started by the appliance; and

the controller starts the unattended timer in response to receiving the start signal from the flow sensor.

6. The system of claim **1**, wherein the sensor IS a wireless receiver detecting a wireless signal transmitted by a user device within the proximity of the appliance.

7. The system of claim **1**, further comprising:

a clock chip coupled to the controller;

wherein the controller further controls the switch to only allow heat generation by the appliance during one or more predetermined date/time ranges; and

the one or more predetermined date/time ranges are set according to one or more messages received via the computer network.

8. The system of claim **1**, wherein:

in response to an event occurrence, the controller controls the control signal to disable heat generation by the appliance;

the controller sends one or more event notifications corresponding to the event occurrence via the computer network; and

after disabling heat generation in response to the event occurrence, the controller only controls the control signal to reenable heat generation by the appliance in response to receiving a reset signal via the computer network.

9. The system of claim 1, further comprising:
a reminder device coupled to the controller but located outside the proximity of the appliance detected by the sensor;
wherein, upon the unattended timer being within an about-to-expire threshold of the predetermined expiry duration, the controller controls the reminder device to remind the user to return to the proximity of the appliance.

10. The system of claim 9, wherein the reminder device includes at least one of a speaker and a light utilized to remind the user to return to the proximity of the appliance.

11. A method of notifying remote users of lack of user presence around an appliance that is generating heat, the method comprising:
selectively limiting flow of a power source to the appliance according to a control signal;
starting an unattended timer after heat generation is started by the appliance;
detecting presence of a user in a proximity of the appliance;
restarting the unattended timer each time the user is detected within the proximity of the appliance while heat generation by the appliance is enabled;
in response to the unattended timer reaching a predetermined expiry duration while heat generation by the appliance is enabled, controlling the control signal to disable heat generation by the appliance and sending one or more alert notifications via a computer network;
starting a return timer after heat generation is disabled by the appliance;
in response to detecting the user is within the proximity of the appliance prior to return timer reaching a predetermined expiry duration, controlling the control signal to re-enable heat generation by the appliance and send one or more alert notifications via the computer network; and
in response to not detecting the user is within the proximity of the appliance prior to return timer reaching a predetermined expiry duration, controlling the control signal to reenable heat generation by the appliance only in response to receiving a reset signal via the computer network.

12. The method of claim 11, dynamically changing the predetermined expiry duration according to one or more configuration messages received via the computer network.

13. The method of claim 11, further comprising:
sending the one or more alert notifications to a server via the computer network; and
in response to receiving the one or more alert notifications, determining by the server a user device associated with the appliance and sending one or more alert messages to the user device.

14. The method of claim 13, further comprising:
in response to the server receiving the one or more alert notifications, selecting by the server the user device from a plurality of user devices associated with the appliance according to a current date/time when the alert notification is received;
wherein the user device selected is a particular one of the user devices designated to receive alerts associated with the appliance during a date/time range that includes the current data/time when he alert notification is received.

15. The method of claim 11, wherein:
generating a start signal in response to a flow sensor detecting heat generation started by the appliance; and
starting the unattended timer in response to receiving the start signal from the flow sensor.

16. The method of claim 11, wherein detecting presence of the user in the proximity of the appliance is performed by a wireless receiver detecting a wireless signal transmitted by a user device within the proximity of the appliance.

17. The method of claim 11, further comprising only allowing heat generation by the appliance during one or more predetermined date/time ranges.

18. The method of claim 11, wherein:
in response to an event occurrence, controlling the control signal to disable heat generation by the appliance;
sending one or more event notifications corresponding to the event occurrence via the computer network; and
after disabling heat generation in response to the event occurrence, only controlling the control signal to reenable heat generation by the appliance in response to receiving a reset signal via the computer network.

19. The method of claim 11, further comprising:
providing a reminder device located outside the proximity of the appliance; and
upon the unattended timer being within an about-to-expire threshold of the predetermined expiry duration, controlling the reminder device to remind the user to return to the proximity of the appliance.

20. A controller for notifying remote users of lack of user presence around an appliance that is generating heat, the controller comprising one or more processors executing software instructions thereby causing the processors to performs steps of:
starting an unattended timer after heat generation is started by the appliance;
detecting presence of a user in a proximity of the appliance;
restarting the unattended timer each time the user is detected within the proximity of the appliance while heat generation by the appliance is enabled;
in response to the unattended timer reaching a predetermined expiry duration while heat generation by the appliance is enabled, generating a control signal to disable heat generation by the appliance and sending one or more alert notifications via a computer network;
starting a return timer after heat generation is disabled by the appliance;
in response to detecting the user is within the proximity of the appliance prior to return timer reaching a predetermined expiry duration, controlling the control signal to re-enable heat generation by the appliance and send one or more alert notifications via the computer network; and
in response to not detecting the user is within the proximity of the appliance prior to return timer reaching a predetermined expiry duration, controlling the control signal to reenable heat generation by the appliance only in response to receiving a reset signal via the computer network.

21. A method for managing presence information comprising:
characterizing presence information corresponding to motion detection in proximity of a heat generating appliance based on inputs from a plurality of sensing devices;
processing at least a portion of the characterized presence information according to a plurality of timing criteria, wherein individual timing criteria defines a

threshold related to evaluating the characterized presence information corresponding to motion detection based on an elapsed time;

managing operational parameters of one or more resources required to operate the heat generating appliance based on the processed at least a portion of the characterized presence information and the plurality of timing criteria, wherein the managed operational parameters include:

at least one operational parameter causing a cessation of heat from the heat generating appliance based on the characterized presence information and at least one timing criterion from the plurality of timing criteria; and

at least one operational parameters causing a re-enabling of generation of heat from the heat generating appliance based on the characterized presence information and at least one timing criterion from the plurality of timing criteria; and

transmitting a combination of the operational parameters and at least one of the characterized presence information and the processed timing criteria via a communication network.

22. The method as recited in claim 21, wherein managing operational parameters of one or more resources required to operate the heat generating appliance incudes at least one initiating a lockout of the heat generating appliance, removing a lockout of the heat generating appliance, disabling a power source associated with the heat generating appliance, partially disabling a power source associated with the heat generating appliance, and disabling a gas source associated with the heat generating appliance.

23. The method as recited in claim 21, wherein managing operational parameters of one or more resources required to operate the heat generating appliance includes partially disabling a power source associated with the heat generating appliance.

24. The method as recited in claim 21, wherein transmitting the at least one of the operational parameters, the characterized presence information, and the processed timing criteria via a communication network includes transmitting log file information.

25. The method as recited in claim 21, wherein characterizing presence information in proximity of a heat generating appliance based on inputs from the plurality of sensing devices includes characterizing presence information in proximity of a plurality of heat generating appliances, the plurality of devices within a defined area.

26. The method as recited in claim 21, wherein the plurality of sensing devices includes at least one primary sensing device and at least one secondary sensing device.

27. The method as recited in claim 21, wherein timing criteria corresponding to a threshold to receive the characterized presence information includes a threshold time for detecting presence information after a first trigger event.

28. The method as recited in claim 21, wherein timing criteria corresponding to a threshold to receive the characterized presence information includes a threshold time for failing to detect presence information after a second trigger event.

29. The method as recited in claim 21 further comprising transmitting user provided communications via the communication network.

30. The method as recited in claim 21 further comprising obtaining at least one of a modification of timing criteria or new timing criteria via the communication network.

31. A system for managing operation of a heat generating appliance comprising:

a controller coupled to a resource control switch, the resource control switch generating one or more control signals to manage operation of at least one heat generating appliance, wherein the controller includes at least one processor and a memory and is configured to execute computer-executable instructions that cause the controller to:

receive inputs from a plurality of sensing devices corresponding to motion detection;

process at least a portion of the received inputs from the plurality of sensing devices according to a plurality of timing criteria, wherein individual timing criteria is used to evaluate the motion detection based on an elapsed time proximate to the heat generating appliance;

generate control signals to cause modification of operational parameters of one or more resources required to operate the heat generating appliance based on the processed at least a portion of the received inputs from the plurality of sensing devices according to a plurality of timing criteria, wherein the modification of the operational parameters include modifying:

at least one operational parameter causing a cessation of heat from the heat generating appliance based on the received inputs from the plurality of sensing devices and at least one timing criterion from the plurality of timing criteria; and

at least one operational parameters causing a re-enabling of generation of heat from the heat generating appliance based on the received inputs from the plurality of sensing devices and at least one timing criterion from the plurality of timing criteria; and

transmit a combination of the operational parameters, a subset of the received inputs from the plurality of sensing devices, and the processed timing criteria via a computer network.

32. The system as recited in claim 31, wherein individual timing criteria corresponds to a threshold based on characterized sensor information derived from the received inputs from the plurality of sensing devices.

33. The system as recited in claim 31, wherein the controller is further operable to generate log information associated with the processing of the received inputs from the plurality of sensing devices according to the plurality of timing criteria.

34. The system as recited in claim 31, wherein controller is further operable to generate at least one interface for obtaining user input.

35. The system as recited in claim 31, wherein the controller is integrated into the heat generating appliance.

36. The system as recited in claim 31, wherein the controller is separate from the at least one heat generating appliance.

37. The system as recited in claim 31, wherein at least one sensing devices is configured to provide an alarm and wherein the controller is further operable to process an alarm.

38. The system as recited in claim 31, wherein the resource control switch generates one or more control signals to manage operation of a plurality of heat generating appliances, and wherein the controller is operable to generate control signals to cause modification of operational parameters of one or more resources required to

operate the plurality of heat generating appliances based on the processed at least a portion of the received inputs from the plurality of sensing devices according to a plurality of timing criteria.

39. The system as recited in claim 31, wherein the controller is configured to transmit the at least one of the operational parameters, a subset of the received inputs from the plurality of sensing devices, and the processed timing criteria to a network resource via a communication network.

40. The system as recited in claim 31, wherein the controller is configured to transmit the at least one of the operational parameters, a subset of the received inputs from the plurality of sensing devices, and the processed timing criteria to a user designated device via a communication network.

41. The system as recited in claim 31, wherein the controller is configured to receive a command from a communication network and generate control signals to cause the modification of operational parameters of one or more resources required to operate the heat generating appliance based on the received command.

42. The system as recited in claim 31, wherein the controller is further configured to identify at least one override event, and wherein processing at least a portion of the received inputs from the plurality of sensing devices according to a plurality of timing criteria includes processing the at least a portion of the received inputs from the plurality of sensing devices according to the plurality of timing criteria and the override event.

43. The system as recited in claim 31, wherein at least some portion of the timing criteria corresponds to at least one a time of day, an identified individual associated with the heat generating appliance or presence information associated with a plurality of individuals.

44. The system as recited in claim 31, wherein at least one of the sensing devices corresponds to a power monitoring device, and wherein processing at least a portion of the received inputs from the plurality of sensing devices according to the plurality of timing criteria includes determining that the heat generating appliance has been activated for use based on power consumption.

45. The system as recited in claim 31, wherein at least one of the sensing devices corresponds to least one of a wireless device, motion sensor, physical control, pressure sensor, temperature sensor, wireless detector, or resource meter.

46. The system as recited in claim 31, wherein generating control signals to cause the modification of operational parameters of one or more resources required to operate the heat generating appliance includes locking out the heat generating appliance responsive to determining of a tampering.

47. A method for managing information generated by a plurality of sensing devices associated with one or more heat generating appliances comprising:

obtaining, by a network-based resource, information from a controller associated with at least one heat generating appliance, the information including a combination of operational parameters, characterized presence information corresponding to motion detection in proximity of the one or more heat generating appliances based on inputs from a plurality of sensing devices, and processed timing criteria via a computer network, wherein individual timing criteria corresponds to a threshold for the controller to evaluate the information from the plurality of sensing devices based on an elapsed time;

processing the obtained information according to one or more rules associated with the controller; and

responsive to the processing of the received information according to one or more rules associated with the controller, transmitting at least one of a notification or a command to modify at least one of the combination of operational parameters of a designated heat generating appliance, wherein the one or more rules correspond to at least one of rule for modifying an operational parameter to cause re-enablement of heat from the one or more heat generating appliances based on the characterized presence information corresponding to the motion detection in proximity of the one or more heat generating appliances.

48. The method as recited in claim 47, wherein transmitting the at least one of the notification or the command to modify an operational parameter of a designated heat generating appliance includes transmitting a command to at least one of a lockout of the designated heat generating appliance or a reduced operational status of the designated heat generating appliance.

49. The method as recited in claim 47, wherein transmitting the at least one of the notification or the command to modify an operational parameter of a designated heat generating appliance includes transmitting an alert notification based on designated alert notification criteria specified in the one or more rules.

50. The method as recited in claim 47, wherein obtaining, by the network-based resource, information from a controller associated with at least one heat generating appliance includes obtaining information from one or more controllers associated with a plurality of heat generating appliances.

51. The method as recited in claim 50, wherein individual of the one or more controllers associated with the plurality of heat generating appliances corresponds to an identified premises, and wherein two or more controllers correspond to different premises.

52. The method as recited in claim 47, wherein the plurality of sensing devices includes at least one primary sensing device and at least one secondary sensing device.

53. The method as recited in claim 47, wherein transmitting the at least one of a notification or a command to modify an operational parameter of the designated heat generating appliance includes transmitting an alert notification based on designated alert notification criteria specified in the one or more rules includes transmitting a request to a designated to authorize an operational parameter associated with the at least one designated heat generating appliance.

54. The method as recited in claim 47, wherein transmitting the at least one of a notification or a command to modify an operational parameter of the designated heat generating appliance includes transmitting an alert notification based on designated alert notification criteria specified in the one or more rules includes transmitting a command to generate at least one output by the controller.

55. The method as recited in claim 47, wherein processing the received information according to one or more rules associated with the controller includes processing the received information according to a plurality of rules, wherein at least a first portion of rules corresponds to a first user and a second portion of rules corresponds to a second user.

56. The method as recited in claim 55, wherein the second portion of rules correspond to an administrator of a multi-premises facility associated with a plurality of controllers.

57. The method as recited in claim 55, wherein the second portion of rules correspond to an identified individual.

58. The method as recited in claim 21, wherein transmitting the combination of the operational parameters and at least one of the characterized presence information and the processed timing criteria includes transmitting the combination of the operational parameters and at least one of the characterized presence information and the processed timing criteria to a remote user device via a communication network, wherein the remote user device is a mobile phone, and wherein the mobile phone is configured to control at least one of the operational parameters.

59. The system as recited in claim 31, wherein transmitting the combination of the operational parameters, the subset of the received inputs from the plurality of sensing devices, and the processed timing criteria includes transmitting the combination of the operational parameters, the subset of the received inputs from the plurality of sensing devices, and the processed timing criteria to a remote user device via a communication network, wherein the remote user device is a mobile phone, and wherein the mobile phone is configured to control at least one of the operational parameters.

60. The method as recited in claim 47, wherein transmitting at least one of the notification or the command to modify at least one of the combination of operational parameters of the designated heat generating appliance includes transmitting at least one of the notification or the command to modify at least one of the combination of operational parameters of the designated heat generating appliance to a remote user device via a communication network, wherein the remote user device is a mobile phone, and wherein the mobile phone is configured to control at least one of the operational parameters.

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