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(54) **METHOD AND SYSTEM FOR CONTROLLING A DOMESTIC APPLIANCE**

(57) The present invention relates to a method and system for controlling a domestic appliance, particularly a cooking hob. The method comprises the step of starting a timer either automatically, if the domestic appliance is left unattended, or manually by a user, e.g. by setting a power level. The timer is stopped, if the user is present in the environment of the domestic appliance again. If the timer has reached a threshold value, then a power level of the domestic appliance is reduced and/or a signal is output.

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Description

[0001] The present invention relates to a method for controlling a domestic appliance, particularly a cooking hob. Further, the present invention relates to a system for controlling a domestic appliance, particularly a cooking hob.

[0002] The chief cause for a burning in a household is a fire on a cooking hob. Particularly, if the cooking hob is unattended during a cooking process, then there is a real fire danger. A dead man's button would confirm the presence of the user, if said dead man's button is continuously operated by the user. However, the continuous operation of the dead man's button would limit the cooking activities of the user.

[0003] It is an object of the present invention to provide a method and a system for controlling a domestic appliance, which reliably controls the domestic appliance in a safe way, if the user is absent.

[0004] The object of the present invention is achieved by the method according to claim 1.

[0005] According to the present invention a method for controlling a domestic appliance, particularly a cooking hob, is provided, wherein said method comprises the steps of:

- starting a timer either automatically, if the domestic appliance is left unattended, or manually by the user, e.g. by setting a power level,
- stopping the timer, if the user is present in the environment of the domestic appliance again, and
- reducing the power level of the domestic appliance and/or outputting a signal, if the timer has reached a threshold value.

[0006] The main idea of the method according to the present invention is that the power level of the domestic appliance is reduced, if said domestic appliance has been left unattended for a certain time. This reduces the danger of a damage. The stopping of the timer, if the user has come back in time within the threshold value, allows that the user may leave the domestic appliance for arbitrary times. The danger of fire is related to the temperature of food, fat and/or oil. The danger of fire increases with the power per area on the cooking hob.

[0007] In particular, the presence or absence of the user in the environment of the domestic appliance is detected, wherein preferably the presence or absence of the user is detected by a camera and/or proximity sensor.

[0008] Preferably, the threshold value depends on the set power level, wherein said threshold value decreases with an increasing set power level. For example, the threshold value is 30 minutes for a minimum set power level, while said threshold value is about three minutes for a maximum set power level is maximum.

[0009] Moreover, the threshold value of the timer may be modified by the user. If the cooking time is very long, e.g. more than 30 minutes, then the user may manually extend the threshold value of the timer.

[0010] The timer can be started by the user. The possibility of the manual start increases the reliability of the system. For example, the manual start of the timer may compensate a dysfunction of the sensor.

[0011] Additionally, the time counted by the timer may be displayed on the domestic appliance.

[0012] Preferably, the signal is an acoustic and/or optical signal.

[0013] For example, the threshold value is between 20 and 40 minutes, preferably about 30 minutes, if the set power level is minimum, while said threshold value is between one and five minutes, preferably about three minutes, if the set power level is maximum.

[0014] Further, the object of the present invention is achieved by the system according to claim 8.

[0015] According to the present invention a system for controlling a domestic appliance, particularly a cooking hob, is provided, wherein said system comprises:

- at least one timer for counting the time, in which the domestic appliance is left unattended, wherein said timer is startable either automatically, if the domestic appliance is left unattended, or manually by the user, e.g. by setting a power level, and
- at least one control device for reducing the power level of the domestic appliance and/or for outputting a signal, if the timer has reached a threshold value.

[0016] The main idea of the inventive system is that the power level of the domestic appliance is reduced, if said domestic appliance has been left unattended for a certain time. By this way the danger of a damage is reduced.

[0017] In particular, the system comprises at least one sensor for detecting the presence or absence of the user in the environment of the domestic appliance, wherein preferably the sensor is a camera and/or a proximity sensor.

[0018] Particularly, the threshold value depends on the set power level, wherein said threshold value decreases with an increasing set power level.

[0019] Further, the threshold value of the timer may be modifiable by the user. If the cooking time is relative long, then the user can manually extend the threshold value of the timer.

[0020] The timer may be manually startable by the user. This option increases the reliability of the system. For example, the manual start of the timer may compensate a dysfunction of the sensor.

[0021] Further, the system may include at least one display device for indicating the time counted by the timer.

[0022] Moreover, at least a part of the system may be an integrated part of the domestic appliance.

[0023] Preferably, the system is provided for controlling a cooking hob.

[0024] In this case, the system includes at least one temperature sensor arranged on the cooking hob, where-

in a temperature limit of said temperature sensor is reduced, if the timer has reached the threshold value.

[0025] Novel and inventive features of the present invention are set forth in the appended claims.

[0026] The present invention will be described in further detail by way of examples.

[0027] In these examples, the method and system of the present invention are provided for controlling a cooking hob. In general, the inventive method and system are suitable for an arbitrary domestic appliance.

[0028] Preferably, the system comprises a sensor for detecting the presence or absence of a user in the environment of the cooking hob. For example, the sensor is a camera and/or a proximity sensor. The sensor is activated, when a cooking process has been started. Preferably, the sensor is arranged in the environment of the cooking hob. For example, the sensor is arranged at a kitchen hood above said cooking hob.

[0029] When the absence of the user in the environment of the cooking hob is detected by the sensor, then a timer is started. Alternatively, the timer is started by the user, for example by setting a power level. However, if the presence of the user is detected again, then the timer is stopped. When the timer has reached a threshold value, then the power level of the cooking hob is reduced. Thus, a countdown time of the timer is defined. The automatic reduction of the power level of the cooking hob avoids the danger of a fire on the cooking hob.

[0030] Additionally or alternatively, a signal is output, when the timer has reached the threshold value. Preferably, said signal is an acoustic signal. Additionally, an optical signal may be provided.

[0031] Further, the timer may also be started manually by the user. This increases the reliability of the system. The manual start of the timer may compensate a dysfunction of the sensor.

[0032] Preferably, the threshold value of the timer, i.e. the countdown time of said timer, depends on the set power level on the cooking hob. For example, if a low power level is set, then the threshold value and countdown time of the timer may be about 30 minutes. In contrast, if a high power level is set, then the threshold value of the timer may be only a few minutes. At the end of the countdown time, the power level is reduced. Alternatively, the dedicated cooking zone or the whole cooking hob is switched off. The danger of fire is related to the temperature of food, fat and/or oil. The danger of fire increases with the power per area on the cooking hob.

[0033] In a preferred embodiment, the threshold value is about 30 minutes, if the set power level is minimum, while said threshold value is about three minutes, if the set power level is maximum.

[0034] Further, the threshold value of the timer may be modified by the user. If the cooking time is relative long, e.g. more than 30 minutes, then the user may manually extend the threshold value of the timer.

[0035] Moreover, the timer is stopped, if the presence of the user in the environment of the cooking hob is detected again before the threshold value has been reached. Thus, the user may leave the cooking hob for an arbitrary number of times.

[0036] Further, the system may include one or more temperature sensors arranged on the cooking hob. A temperature limit of said temperature sensors may be reduced, if the timer has reached the threshold value.

[0037] Although embodiments of the present invention have been described herein by way of examples, it is to be understood that the present invention is not limited to those precise embodiments, and that various other changes and modifications may be affected therein by one skilled in the art without departing from the scope or spirit of the invention. All such changes and modifications are intended to be included within the scope of the invention as defined by the appended claims.

Claims

1. A method for controlling a domestic appliance, particularly a cooking hob, wherein said method comprises the steps of:

   - starting a timer either automatically, if the domestic appliance is left unattended, or manually by a user, e.g. by setting a power level,
   - stopping the timer, if the user is present in the environment of the domestic appliance again, and
   - reducing the power level of the domestic appliance and/or outputting a signal, if the timer has reached a threshold value.

2. The method according to claim 1, **characterised in that** the presence or absence of the user in the environment of the domestic appliance is detected, wherein preferably the presence or absence of the user is detected by a camera and/or proximity sensor.

3. The method according to claim 1 or 2, **characterised in that** the threshold value depends on the set power level, wherein said threshold value decreases with an increasing set power level.

4. The method according to any one of the preceding claims, **characterised in that** the threshold value of the timer is modified by the user.

5. The method according to any one of the preceding claims, **characterised in that** the time counted by the timer is displayed on the domestic appliance.

6. The method according to any one of the preceding

claims, **characterised in that**
the signal is an acoustic and/or optical signal.

7. The method according to any one of the preceding claims, **characterised in that**
the threshold value is between 20 and 40 minutes, preferably about 30 minutes, if the set power level is minimum, while said threshold value is between one and five minutes, preferably about three minutes, if the set power level is maximum.

8. A system for controlling a domestic appliance, particularly a cooking hob, wherein said system comprises:

- at least one timer for counting the time, in which the domestic appliance is left unattended, wherein said timer is startable either automatically, if the domestic appliance is left unattended, or manually by the user, e.g. by setting a power level, and
- at least one control device for reducing the power level of the domestic appliance and/or for outputting a signal, if the timer has reached a threshold value.

9. The system according to claim 8,
characterised in that
the system comprises at least one sensor for detecting the presence or absence of the user in the environment of the domestic appliance, wherein preferably the sensor is a camera and/or a proximity sensor.

10. The system according to claim 8 or 9,
characterised in that
the threshold value depends on the set power level, wherein said threshold value decreases with an increasing set power level.

11. The system according to any one of the claims 8 to 10, **characterised in that**
the threshold value of the timer is modifiable by the user.

12. The system according to any one of the claims 8 to 11, **characterised in that**
the system includes at least one display device for indicating the time counted by the timer.

13. The system according to any one of the claims 8 to 12, **characterised in that**
at least a part of the system is an integrated part of the domestic appliance.

14. The system according to any one of the claims 8 to 13, **characterised in that**
the system is provided for controlling a cooking hob.

15. The system according to claim 14,
characterised in that
the system includes at least one temperature sensor arranged on the cooking hob, wherein a temperature limit of said temperature sensor is reduced, if the timer has reached the threshold value.

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EUROPEAN SEARCH REPORT

Application Number
EP 19 18 5905

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	2 December 2019	Rodriguez, Alexander

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
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