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(54) **METHOD FOR CONTROLLING A HOB BY MEANS OF A PORTABLE DEVICE**

VERFAHREN ZUR STEUERUNG EINES KOCHFELDES MITTELS EINER TRAGBAREN
VORRICHTUNG

PROCÉDÉ DE COMMANDE D'UNE CUISINIÈRE À L'AIDE D'UN DISPOSITIF PORTABLE

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(56) References cited:
EP-A1- 3 236 709 EP-A1- 3 489 584
EP-A1- 3 653 937 WO-A1-2017/013558
WO-A1-2017/143224 WO-A1-2019/209371
DE-A1-102012 205 621 DE-B3-102019 128 303
GB-A- 2 552 972

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Description

TECHNICAL FIELD

[0001] The present invention relates to methods for controlling a cooking hob by means of a portable device.

PRIOR ART

[0002] Methods for controlling a cooking hob by means of a portable device in which, with the portable device, there are programmed instructions which are transmitted to the hob for commanding it are known.

[0003] EP3236709A1, DE102012205621A1, WO2019209371A1, EP3489584A1 and WO2017013558A1 disclose controlling a cooking device by means of an external device.

[0004] US2017/0310810A1 discloses a method for controlling a cooking hob by means of a portable device in which there are programmed instructions which are transmitted to the hob for commanding it from said portable device. First, a pairing between said device and said cooking hob, and the subsequent confirmation by a user is required. After that, the user has control by means of the portable device, from which the user can program and transmit the instructions to the hob, where they are executed. In order to ensure to a greater extent that the user is close to the hob, the level of the signal that is output from the portable device upon being paired with the hob is determined and stored in a memory of the hob itself, and the instructions which are received in said hob from the mobile device are executed provided that the level of the signal received in the hob does not drop below a given threshold depending on the stored level or does not drop below a given level with respect to the level stored.

DISCLOSURE OF THE INVENTION

[0005] The object of the invention is to provide a method for controlling a cooking hob by means of a portable device, as defined in the claims.

[0006] The invention relates to a method for controlling a cooking hob by means of a portable device in which instructions for the cooking hob are programmed, said instructions being transmitted to said cooking hob and being a single order or a sequence of orders for being executed successively or in parallel in the cooking hob for controlling at least one functional element of said cooking hob. The method comprises the steps of:

- S1) a user programming in the portable device the instructions to be transmitted to the cooking hob,
- S2) the user validating in the portable device the programmed instructions,
- S3) establishing a pairing between the cooking hob and the portable device when the cooking hob and the portable device are turned on, the pairing being

configured for allowing communication between said cooking hob and said portable device,

S4) outputting a pairing established notification in the cooking hob,

S5) requesting the instructions validated in the portable device, by means of the user acting on the cooking hob, after outputting the pairing established notification,

S6) automatically transmitting the instructions programmed and validated in the portable device, from said portable device to said cooking hob, after receiving the instruction request in said portable device, and

S7) automatically executing in the cooking hob the instructions received in the cooking hob from the portable device.

[0007] Steps S1 and S2 are implemented in the portable device and can be executed before, during, or after step S3.

[0008] In this manner, with the proposed method a more accessible and safe cooking is offered for some groups with an impairment. This is done as a result of the two confirmations by the user, one in each apparatus involved (a first confirmation in the portable device, the validation, step S2, and a second confirmation in the cooking hob, instruction request, step S5), whereby the instructions to be executed in the cooking hob are not sent to said cooking hob unless these two confirmations associated with said instructions have previously been performed, thereby largely ensuring that they cannot mistakenly or accidentally be executed, given that they are not in said cooking hob before having the two confirmations.

[0009] Having to provide a confirmation in the portable device before providing one in the cooking hob considerably reduces the risk of unwanted instructions being mistakenly sent to the cooking hob, because even though they have been validated in the portable device itself, if the user is aware that he or she has mistakenly validated it, these instructions will not reach the cooking hob given that they require additional confirmation in the cooking hob, and, furthermore, starting a new programming again is easy and quick. The second confirmation will only be performed in cases where it is considered that the validated instructions are the correct or desired instructions, proposing a method for controlling cooking hobs from portable devices that is safer than those that are known.

[0010] The programmed and validated instructions are transmitted only if, in addition, the time elapsed between the validation of the instructions programmed in the portable device and the reception of the instruction request in said portable device is less than a predetermined transmission time. The method further comprises a cancellation step for cancelling the instructions validated in the portable device if the transmission time has elapsed.

[0011] These and other advantages and features of the invention will become apparent in view of the figures

and the detailed description of the invention.

DESCRIPTION OF THE DRAWINGS

[0012]

Figure 1 shows a schematic view of a cooking hob and a portable device by means of which the cooking hob is operated.

Figure 2 schematically shows steps of a preferred embodiment of the method according to the invention.

Figure 3 shows in detail the steps of the method of Figure 2 which are implemented in the portable device.

Figure 4 shows in detail the steps of the method of Figure 2 which are implemented in the cooking hob.

Figure 5 schematically shows elements of the cooking hob of Figure 1.

DETAILED DISCLOSURE OF THE INVENTION

[0013] The invention relates to a method which is suitable for controlling a cooking hob 1 by means of a portable device 2 (see Figure 1) in which instructions for the cooking hob 1 are programmed, said instructions being transmitted to said cooking hob 1. The cooking hob 1 comprises at least one functional element (an induction zone 3, for example) for being operated by means of the portable device 2.

[0014] The method comprises the steps of:

S1) a user programming in the portable device 2 the instructions to be transmitted to the cooking hob 1, S2) the user validating in the portable device 2 the programmed instructions, S3) establishing a pairing between the cooking hob 1 and the portable device 2, when the cooking hob 1 and the portable device 2 are turned on, the pairing being configured for allowing communication between said cooking hob 1 and said portable device 2, S4) outputting a pairing established notification in the cooking hob 1, preferably by means of a vibration and/or light and/or acoustic and/or voice indication in the cooking hob 1 such that the user is notified that the cooking hob 1 and the portable device 2 are prepared for communicating with one another, S5) requesting the instructions validated in the portable device 2, by means of the user acting on the cooking hob 1, after outputting the pairing established notification, S6) automatically transmitting the instructions programmed and validated in the portable device 2, from said portable device 2 to said cooking hob 1, after

receiving the instruction request in said portable device 2, and

S7) automatically executing in the cooking hob 1 the instructions received in the cooking hob 1 from the portable device 2.

[0015] The programmed instructions are a single order or a sequence of orders for being executed successively or in parallel in the cooking hob 1 for controlling the at least one functional element. For example, it can be a given value of a given parameter for controlling the functional element such as a power level, a cooking time, or a standby time. It can also be a series of orders for being executed in parallel for controlling the functional element such as a power level and a cooking time. It can even be a sequence of orders for being executed successively for controlling the functional element such as a pre-established operating mode of the functional element associated with a type of dish or with a digital recipe.

[0016] Steps S1 and S2 are implemented in the portable device 2. Obviously, to be able to validate the programmed instructions, the validation step S2 must come after the programming step S1. However, the programming step S1 and validation step S2 can be executed before, during, or after the pairing establishment step S3, given that they do not require interaction with the cooking hob 1, although they are preferably executed after, as depicted in the embodiment shown in Figure 2.

[0017] In the programming step S1, the instructions to be transmitted to the cooking hob 1 are programmed in the portable device 2 by the user. Said instructions can be programmed by entering the instructions in parts from the start, or by modifying and/or selecting pre-established instructions or pre-established operating modes in the portable device 2. Modifying and/or selecting pre-established instructions in the portable device 2 instead of having to enter them from the start simplify the programming step S1 by the user.

[0018] The portable device 2 may comprise a communication interface for communicating with the cooking hob 1, control means, and a user interface by means of which the user can interact with the mobile device 2. Preferably, an application installed in the control means of the portable device 2 allows the instructions to be programmed in the portable device 2 and the user interface allows the user to interact with the mobile device 2 for programming and validating said instructions. The user interface can be a touch screen or voice recognition means, for example.

[0019] The pairing established notification (in step S4) notifies the user that the cooking hob 1 and the portable device 2 are prepared for communicating with one another.

[0020] Once the pairing established notification is output, with the user acting on the cooking hob 1 the instructions validated in the portable device 2 are requested. As a response to this action, the cooking hob 1 sends a validated instruction request to the portable device 2 for

said portable device 2 to send them to it.

[0021] Once said instruction request is received in said portable device 2, the instructions programmed and validated in the portable device 2 are automatically transmitted from said portable device 2 to said cooking hob 1 (step S6). Under normal circumstances, the cooking hob 1 receives said instructions and automatically executes them (step S7).

[0022] In the context of the invention, "automatically" must be interpreted as the associated action (transmission or execution of instructions, for example) being performed directly, without the need for further action by the user.

[0023] It is not necessary to check the order in which the confirmations (steps S2 and S5) are performed in the method of the invention. As mentioned, it must be confirmed in the portable device 2 (step S2) before it is confirmed in the cooking hob 1 (step S5), but if it is first confirmed in the cooking hob 1 said cooking hob 1 simply would not receive instructions to be executed because there would still be nothing validated in the portable device 2 when said portable device 2 receives the corresponding request.

[0024] Preferably, nor is it necessary to check if the pairing is maintained or lost once said pairing is established. In the event that the established pairing is lost, instructions for being executed would not reach the cooking hob 1. Said lack of communication may prevent, for example, the portable device 2 from receiving the instruction request output from the cooking hob 1 or it may prevent said cooking hob 1 from receiving the instructions transmitted from said portable device 2. The method for controlling a cooking hob 1 by means of a portable device 2 is thereby simplified.

[0025] The programmed and validated instructions are transmitted only if, in addition, the time elapsed between the validation of the instructions programmed in the portable device 2 and the reception of the instruction request in said portable device 2 is less than a predetermined transmission time t_{trans} , as depicted in Figure 3. It is thereby ensured that the instructions are not sent to said cooking hob 1 unless these two confirmations occur in said transmission time t_{trans} . The presence of the user at the cooking hob 1 is ensured by means of the user acting on the cooking hob 1 when the instruction request is executed (step S5), whereas the transmission time t_{trans} assures that the user cannot be located at a distance from the cooking hob 1 that is greater than the distance that said user may travel in said transmission time t_{trans} when executing the validation (step S2).

[0026] Therefore, a transmission time t_{trans} set to a relative short time allows assuring that the user must be in the vicinity of the cooking hob 1 when executing the validation in the portable device 2, such that the instructions cannot be sent due to involuntary actions of third parties in the vicinity of the cooking hob 1 without the user knowing that he or she is performing said validation. Preferably, the predetermined maximum time is less than 30

seconds, more preferably less than 15 seconds. The transmission time t_{trans} can thus be set to a time that is so short that it is ensured that the cooking hob 1 is in view of the user when said user executes the validation in the portable device 2.

[0027] The method according to the invention comprises a cancellation step S10 for cancelling the instructions validated in the portable device 2 if, once the transmission time t_{trans} has elapsed, an instruction request from the cooking hob 1 is not received in the portable device 2 since said validation has been performed. The validated instructions are thereby cancelled in the portable device 2 and the user of the portable device 2 is notified that the validated instructions have not been transmitted and the user may furthermore be notified of this fact, where said user must perform a new validation in the portable device 2. Preferably only the validation of the programmed instructions would be cancelled; said programmed instructions could remain in the portable device 2, such that it would be sufficient for the user to repeat only the validation of the programmed instructions in order to try to activate the method again, and said user would not have to waste time repeating the programming step. Therefore, once again having the portable device 2 ready to send instructions to the cooking hob 1 is easy and quick.

[0028] The pairing established notification (step S4) is output preferably by means of a vibration and/or light and/or acoustic and/or voice indication in the cooking hob 1. The user is thereby notified that the cooking hob 1 and the portable device 2 are prepared for communicating with one another.

[0029] Furthermore, if notification is provided in at least two different ways, it is largely assured that the notification reaches a user with an impairment, for example, a user with impaired sight. Additionally, by arranging the notification means close to the actuation element 4 the notification means 5 can guide the user as to the location of the cooking hob 1 on which he or she must act for executing the instruction request (step S5) when appropriate.

[0030] The cooking hob 1 and the portable device 2 are configured for communicating with one another in a wireless manner. Preferably said communication is performed such that the signals that are output have a maximum range equal to or less than a predetermined maximum distance. It is thereby assured that the instructions are not received in the cooking hob 1 unless a distance between the portable device 2 and the cooking hob that is less than (or equal to) said predetermined maximum distance is assured. If there is no communication between said portable device 2 and said cooking hob 1, even though the portable device 2 sends said instructions, they are not received in the cooking hob 1.

[0031] The predetermined maximum distance is preferably a distance less than 1 m. It is thereby assured that the cooking hob 1 is in view of the user of the portable device 2 when the instruction request is executed.

[0032] The communication protocol can be an NFC

protocol, or a Bluetooth protocol in which the strength of the signals output by the cooking hob 1 and/or the portable device 2 is limited so that the range of said signals does not exceed the predetermined maximum distance. The manner of assuring the proximity between the portable device 2 and the cooking hob 1 is thereby simplified. In the aforementioned communication protocols, the signals are output directly from the portable device 2 to the cooking hob 1 and vice versa.

[0033] However, in other embodiments the cooking hob 1 and the portable device 2 can also be communicated with one another by means of intermediate devices such as servers on the cloud. For example, the cooking hob 1 can be communicated with a server on the cloud and the portable device 2 can be communicated with another server on the cloud, both servers being communicated with one another over the Internet.

[0034] The method can output an error notification (step S8) in the cooking hob 1 preferably by means of a vibration and/or light and/or acoustic and/or voice indication if, once a predetermined reception time t_{rec} from the request of the validated instructions has elapsed, the instructions are not received in the cooking hob 1, as depicted in Figure 4. Said indication thereby alerts the user that even though the instruction request has been performed in the cooking hob 1, said instructions have not been received in the cooking hob 1, that is, even though they have been requested, they do not arrive. Therefore, the user is aware that the instructions could not be executed in the cooking hob 1. The user can thus start again with a new programming of the instructions or even resume the method in the step of the method deemed appropriate for trying to execute the already programmed instructions.

[0035] The method can also output an instructions executed notification (step S9) in the cooking hob 1 by means of a vibration and/or light and/or acoustic and/or voice indication after executing the instructions (step S7), as occurs in the preferred embodiment of the method shown in Figures 2 to 4. It is considered that the instructions are executed when the cooking hob 1 is commanded according to the instructions transmitted by the portable device 2. The user is thereby notified that the cooking hob 1 is being commanded by the portable device 2.

[0036] Preferably the pairing established notification, error notification, and instructions executed notification are indicated in a different manner in each case, such that the user can distinguish one notification from another.

[0037] The method is implemented in a system with a cooking hob 1 and a portable device 2. The cooking hob 1 comprises an actuation element 4 configured for being actuated by a user, notification means 5, at least one communication interface 6 suitable for communicating with the portable device 2, and control means. Said control means are configured for implementing the steps of the previously described method, in any of its embodiments, corresponding to the cooking hob 1, said control

means thus being configured based on the embodiment of the method to be implemented.

[0038] In the example of figure 1, the cooking hob 1 is an induction hob comprising three induction zones 3 (each induction zone 3 would be a functional element), and the portable device 2 is a mobile telephone by means of which the induction zones 3 of the induction cooking hob 1 are operated. Although the induction cooking hob 1 can be controlled from a portable device 2, said induction cooking hob 1 furthermore preferably comprises a panel of push buttons or the like to enable being controlled also like conventional induction hobs 2.

[0039] In other examples, the cooking hob 1 can be an induction hob of another type, or it may comprise another number and type of functional elements which can be operated by the portable device 2. The portable device 2 can also be of another type, for example, a tablet or even a speaker.

[0040] The actuation element 4 is configured for being actuated by a user for requesting the instructions validated in the portable device 2 and the notification means 5 are configured for outputting at least a pairing established notification.

[0041] The control means control the actuation element 4, the notification means 5, and the communication interface 6.

[0042] Preferably the notification means 5 are also configured for outputting other notifications of the method in the cooking hob 1, for example, the error notification indicated in step S8 or the instructions executed notification indicated in step S9. Sole notification means 5 in the cooking hob 1 are thereby required.

[0043] Preferably the notification means 5 will output a different indication depending on the notification they must output in each case. The user can thereby distinguish one notification from another with the same notification means 5 in the cooking hob 1.

[0044] The actuation element 4 can be, for example, a tactile sensor which the user actuates by contact and the notification means 5 can be, for example, LEDs and a buzzing generator arranged around the actuation element 4 which light up and sound in a given manner depending on the notification they must output in each case. For example, the pairing established notification mentioned in step S4 can be a constant illumination along with a buzzing of the notification means 5, whereas the error notification can be a flashing illumination along with several buzzes.

[0045] However, the actuation element 4 can also be a proximity sensor which is actuated by the user bringing the portable device 2 closer to or positioning same in a given location of the cooking hob 1.

[0046] Preferably, as depicted in Figure 5, the cooking hob 1 comprises a main printed circuit board 81 communicated with a user interface 9 and an auxiliary printed circuit board 82 in which the actuation element 4 and the notification means 5 are arranged and communicated with the user interface 9, the control means comprising

a main control device 71 arranged in the main printed circuit board 81 and an auxiliary control device 72 arranged in the auxiliary printed circuit board 82, the main control device 71 being configured for executing the instructions received from the portable device 2 and the auxiliary control device 72 being configured for controlling communications between the main printed circuit board 81 and the auxiliary printed circuit board 82 and communications between the cooking hob 1 and the portable device 2.

[0047] Conventional main control devices and main printed circuit boards of cooking hobs which are not commanded by portable devices can thereby be used in the cooking hob 1.

[0048] Preferably, the communication interface 6 is arranged in the auxiliary printed circuit board 82. All the components that are different from conventional cooking hobs for commanding the cooking hob 1 from a portable device 2 according to the method of the invention are thereby arranged in the auxiliary printed circuit board 82.

[0049] Preferably, the actuation element 4, the notification means 5, and the communication interface 6 are controlled by the auxiliary control device 72.

Claims

1. Method for controlling a cooking hob by means of a portable device in which instructions for the cooking hob (1) are programmed, said instructions being transmitted to said cooking hob (1) and being a single order or a sequence of orders for being executed successively or in parallel in the cooking hob (1) for controlling at least one functional element of said cooking hob (1), **characterized in that** the method comprises the steps of:

S1) a user programming in the portable device (2) the instructions to be transmitted to the cooking hob (1),

S2) the user validating in the portable device (1) the programmed instructions,

S3) establishing a pairing between the cooking hob (1) and the portable device (2) when the cooking hob (1) and the portable device (2) are turned on, the pairing being configured for allowing communication between said cooking hob (1) and said portable device (2),

S4) outputting a pairing established notification in the cooking hob (1), S5) requesting the instructions validated in the portable device (2), by means of the user acting on the cooking hob (1), after outputting the pairing established notification,

S6) automatically transmitting the instructions programmed and validated in the portable device (2), from said portable device (2) to said cooking hob (1), after receiving the instruction

request in said portable device (2), and S7) automatically executing in the cooking hob (1) the instructions received in the cooking hob (1) from the portable device (2),

where steps S1 and S2 can be executed before, during, or after step S3, **characterised in that** the programmed and validated instructions are transmitted only if, in addition, the time elapsed between the validation of the instructions programmed in the portable device (2) and the reception of the instruction request in said portable device (2) is less than a predetermined transmission time (t_{trans}), the method further comprising a cancellation step (S10) for cancelling the instructions validated in the portable device (2) if the transmission time (t_{trans}) has elapsed.

2. Method according to claim 1, wherein the predetermined transmission time (t_{trans}) is less than 30 seconds, preferably less than 15 seconds.
3. Method according to any of the preceding claims, wherein the pairing established notification is output by means of a vibration and/or light and/or acoustic and/or voice indication in the cooking hob (1).
4. Method according to any of the preceding claims, wherein the cooking hob (1) and the portable device (2) are configured for communicating with one another wirelessly by means of a communication protocol with which signals are output with a maximum range equal to or less than a predetermined maximum distance, the predetermined maximum distance preferably being a distance less than 1 m.
5. Method according to claim 4, wherein the communication protocol is an NFC protocol.
6. Method according to claim 4, wherein the communication protocol is a Bluetooth protocol in which the strength of the signals output by the cooking hob (1) and/or the portable device (2) is limited so that the range of said signals does not exceed the predetermined maximum distance.
7. Method according to any of the preceding claims, wherein an error notification is output in the cooking hob by means of a vibration and/or light and/or acoustic and/or voice indication if, once a predetermined reception time (t_{rec}) from the request of the validated instructions has elapsed, the instructions are not received in the cooking hob (1).
8. Method according to any of the preceding claims, wherein an instructions executed notification is output in the cooking hob (1) by means of a vibration and/or light and/or acoustic and/or voice indication after executing the instructions.

Patentansprüche

1. Verfahren zur Steuerung eines Kochfeldes mittels einer tragbaren Vorrichtung, in welcher Anweisungen für das Kochfeld (1) programmiert sind, wobei die genannten Anweisungen dem genannten Kochfeld (1) übertragen werden und ein einziger Befehl oder eine Reihenfolge von Befehlen sind, für deren aufeinanderfolgenden oder parallelen Ausführung im Kochfeld (1) zur Steuerung mindestens eines Funktionselements des genannten Kochfeldes (1), **dadurch gekennzeichnet, dass** das Verfahren folgende Schritte umfasst:

S1) das Programmieren in der tragbaren Vorrichtung (2) vonseiten eines Benutzers der dem Kochfeld (1) zu übertragenden Anweisungen, S2) das Validieren in der tragbaren Vorrichtung (1) vonseiten des Benutzers der programmierten Anweisungen, S3) das Herstellen einer Paarung zwischen dem Kochfeld (1) und der tragbaren Vorrichtung (2), wenn das Kochfeld (1) und die tragbare Vorrichtung (2) eingeschaltet werden, wobei die Paarung dazu ausgebildet ist, die Kommunikation zwischen dem genannten Kochfeld (1) und der genannten tragbaren Vorrichtung (2) zu erlauben, S4) das Ausgeben einer Meldung der hergestellten Paarung im Kochfeld (1), S5) das Anfordern der in der tragbaren Vorrichtung (2) validierten Anweisungen, indem der Benutzer auf dem Kochfeld (1) agiert, nachdem die Meldung der hergestellten Paarung ausgegeben worden ist, S6) das automatische Übertragen der in der tragbaren Vorrichtung (2) programmierten und validierten Anweisungen, von der genannten tragbaren Vorrichtung (2) zum genannten Kochfeld (1), nachdem die Anweisungsanforderung in der genannten tragbaren Vorrichtung (2) empfangen worden ist, und S7) das automatische Ausführen im Kochfeld (1) der aus der tragbaren Vorrichtung (2), im Kochfeld (1) empfangenen Anweisungen,

wobei die Schritte S1 und S2 vor, während oder nach Schritt S3 ausgeführt werden können, **dadurch gekennzeichnet, dass** die programmierten und validierten Anweisungen nur übertragen werden, wenn, zusätzlich, die Zeit, welche zwischen der Validierung der in der tragbaren Vorrichtung (2) programmierten Anweisungen und dem Empfangen der Anweisungsanforderung in der genannten tragbaren Vorrichtung (2) abgelaufen ist, kürzer als eine vorbestimmte Übertragungszeit (t_{trans}) ist, wobei das Verfahren zusätzlich einen Annullierungsschritt (S10) umfasst, zum Annullieren der in der tragbaren Vor-

richtung (2) validierten Anweisungen, wenn die Übertragungszeit (t_{trans}) abgelaufen ist.

2. Verfahren nach Anspruch 1, wobei die vorbestimmte Übertragungszeit (t_{trans}) kürzer als 30 Sekunden, vorzugsweise kürzer als 15 Sekunden ist.
3. Verfahren nach einem der vorhergehenden Ansprüche, wobei die Meldung der hergestellten Paarung mittels einer Vibration und/oder Licht und/oder einer akustischen und/oder Sprachanzeige im Kochfeld (1) ausgegeben wird.
4. Verfahren nach einem der vorhergehenden Ansprüche, wobei das Kochfeld (1) und die tragbare Vorrichtung (2) dazu ausgebildet sind, miteinander drahtlos mittels eines Kommunikationsprotokolls zu kommunizieren, mit welchem Signale mit einer maximalen Reichweite gleich oder kleiner als ein vorbestimmter maximaler Abstand ausgegeben werden, wobei der vorbestimmte maximale Abstand vorzugsweise ein Abstand kleiner als 1 m ist.
5. Verfahren nach Anspruch 4, wobei das Kommunikationsprotokoll ein NFC-Protokoll ist.
6. Verfahren nach Anspruch 4, wobei das Kommunikationsprotokoll ein Bluetooth-Protokoll ist, in welchem die Stärke der vom Kochfeld (1) und/oder von der tragbaren Vorrichtung (2) ausgegebenen Signale beschränkt wird, sodass die Reichweite der genannten Signale den vorbestimmten maximalen Abstand nicht überschreitet.
7. Verfahren nach einem der vorhergehenden Ansprüche, wobei eine Fehlermeldung im Kochfeld mittels einer Vibration und/oder Licht und/oder einer akustischen und/oder Sprachanzeige ausgegeben wird, wenn, sobald eine vorbestimmte Empfangszeit (t_{rec}) seit der Anforderung der validierten Anweisungen abgelaufen ist, die Anweisungen nicht im Kochfeld (1) empfangen werden.
8. Verfahren nach einem der vorhergehenden Ansprüche, wobei eine Meldung der ausgeführten Anweisungen im Kochfeld (1) mittels einer Vibration und/oder Licht und/oder einer akustischen und/oder Sprachanzeige ausgegeben wird, nachdem die Anweisungen ausgeführt werden.

Revendications

1. Procédé de commande d'une cuisinière à l'aide d'un dispositif portable dans lequel des instructions pour la cuisinière (1) sont programmées, lesdites instructions étant transmises à ladite cuisinière (1) et étant un ordre unique ou une séquence d'ordres destinés

à être exécutés successivement ou en parallèle dans la cuisinière (1) pour commander au moins un élément fonctionnel de ladite cuisinière (1), **caractérisé en ce que** le procédé comprend les étapes suivantes :

S1) l'utilisateur programme dans le dispositif portable (2) les instructions à transmettre à la cuisinière (1),
 S2) l'utilisateur valide dans le dispositif portable (1) les instructions programmées,
 S3) l'établissement d'un appariement entre la cuisinière (1) et le dispositif portable (2) lorsque la cuisinière (1) et le dispositif portable (2) sont allumés, l'appariement étant configuré pour permettre la communication entre ladite cuisinière (1) et ledit dispositif portable (2),
 S4) émettre une notification d'appariement établi dans la cuisinière (1),
 S5) demander les instructions validées dans le dispositif portable (2), par l'intermédiaire de l'utilisateur agissant sur la cuisinière (1), après avoir émis la notification d'appariement établi,
 S6) transmettre automatiquement les instructions programmées et validées dans le dispositif portable (2), dudit dispositif portable (2) à ladite cuisinière (1), après réception de la demande d'instructions dans ledit dispositif portable (2), et
 S7) exécuter automatiquement dans la cuisinière (1) les instructions reçues dans la cuisinière (1) depuis le dispositif portable (2),

où les étapes S1 et S2 peuvent être exécutées avant, pendant ou après l'étape S3, **caractérisée en ce que** les instructions programmées et validées ne sont transmises que si, en outre, le temps écoulé entre la validation des instructions programmées dans le dispositif portable (2) et la réception de la demande d'instruction dans ledit dispositif portable (2) est inférieur à un temps de transmission prédéterminé (t_{trans}), le procédé comprenant en outre une étape d'annulation (S10) pour annuler les instructions validées dans le dispositif portable (2) si le temps de transmission (t_{trans}) s'est écoulé.

2. Procédé selon la revendication 1, dans lequel le temps de transmission prédéterminé (t_{trans}) est inférieur à 30 secondes, de préférence inférieur à 15 secondes.
3. Procédé selon l'une quelconque des revendications précédentes, dans lequel la notification d'appariement établi est émise au moyen d'une indication vibratoire et/ou lumineuse et/ou sonore et/ou vocale dans la table de cuisson (1).
4. Procédé selon l'une quelconque des revendications précédentes, dans lequel la table de cuisson (1) et

le dispositif portable (2) sont configurés pour communiquer entre eux sans fil au moyen d'un protocole de communication avec lequel des signaux sont émis avec une portée maximale égale ou inférieure à une distance maximale prédéterminée, la distance maximale prédéterminée étant de préférence une distance inférieure à 1 m.

5. Procédé selon la revendication 4, dans lequel le protocole de communication est un protocole NFC.
6. Procédé selon la revendication 4, dans lequel le protocole de communication est un protocole Bluetooth dans lequel la puissance des signaux émis par la cuisinière (1) et/ou le dispositif portable (2) est limitée de sorte que la portée desdits signaux ne dépasse pas la distance maximale prédéterminée.
7. Procédé selon l'une quelconque des revendications précédentes, dans lequel une notification d'erreur est émise dans la cuisinière au moyen d'une indication vibratoire et/ou lumineuse et/ou acoustique et/ou vocale si, une fois écoulé un temps de réception prédéterminé (t_{rec}) à partir de la demande des instructions validées, les instructions ne sont pas reçues dans la cuisinière (1).
8. Procédé selon l'une quelconque des revendications précédentes, dans lequel une notification d'exécution d'instructions est émise dans la cuisinière (1) au moyen d'une vibration et/ou d'une lumière et/ou d'une indication acoustique et/ou vocale après l'exécution des instructions.

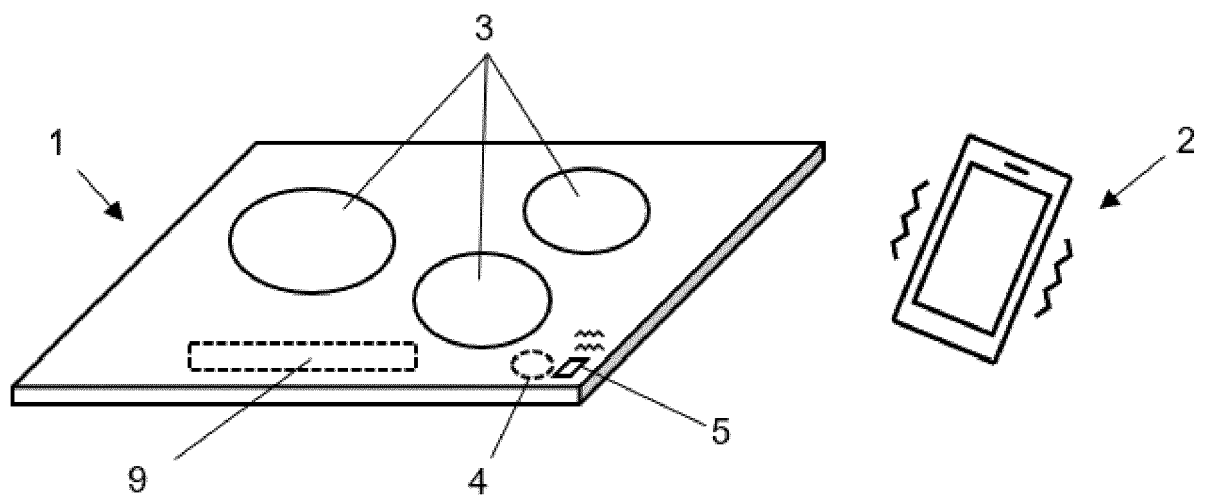


Fig. 1

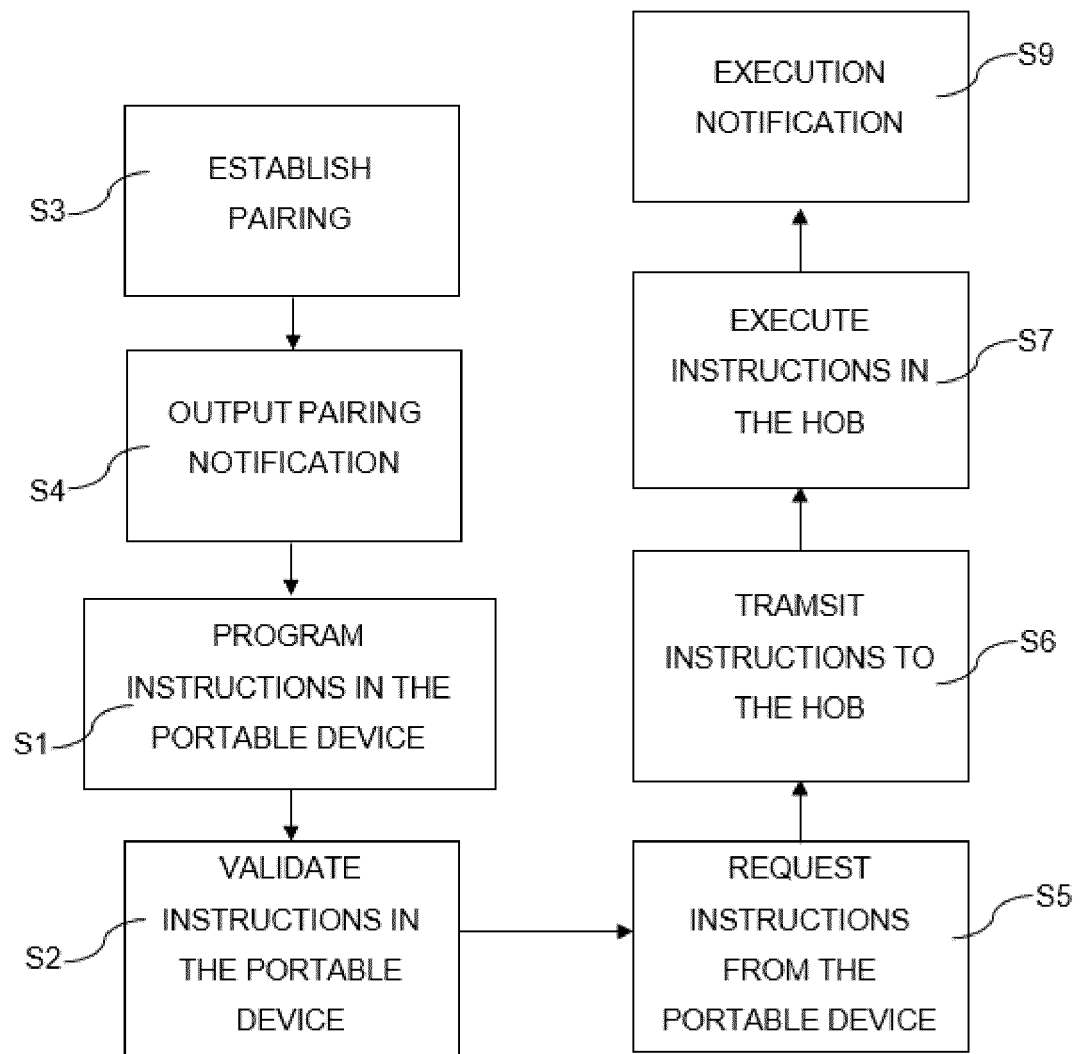


Fig. 2

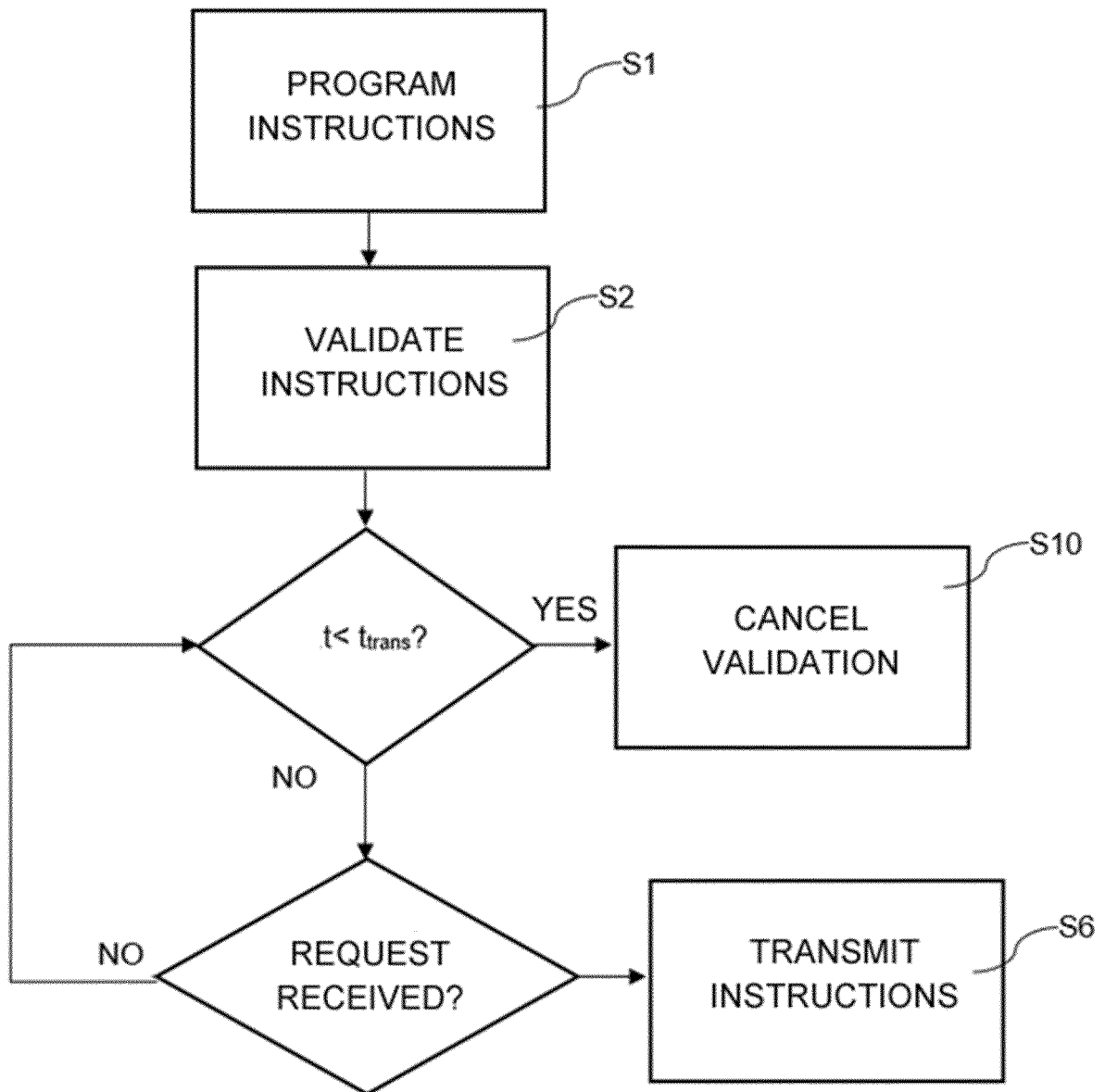


Fig. 3

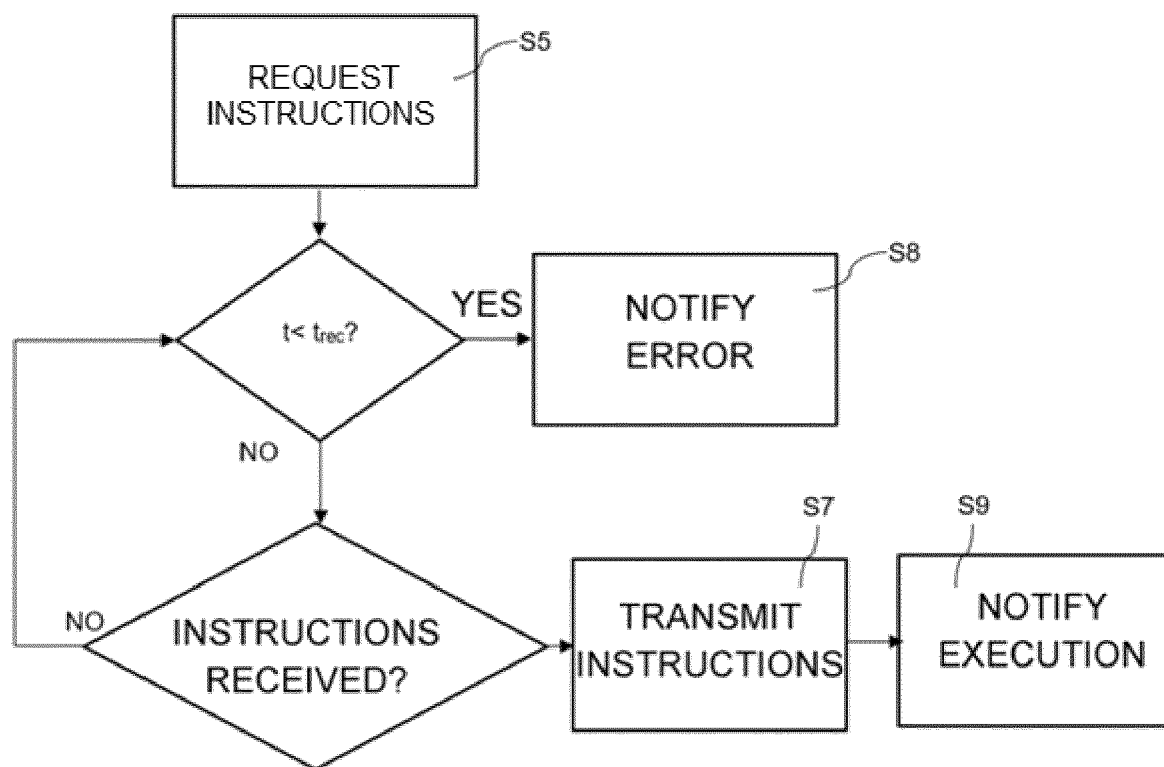


Fig. 4

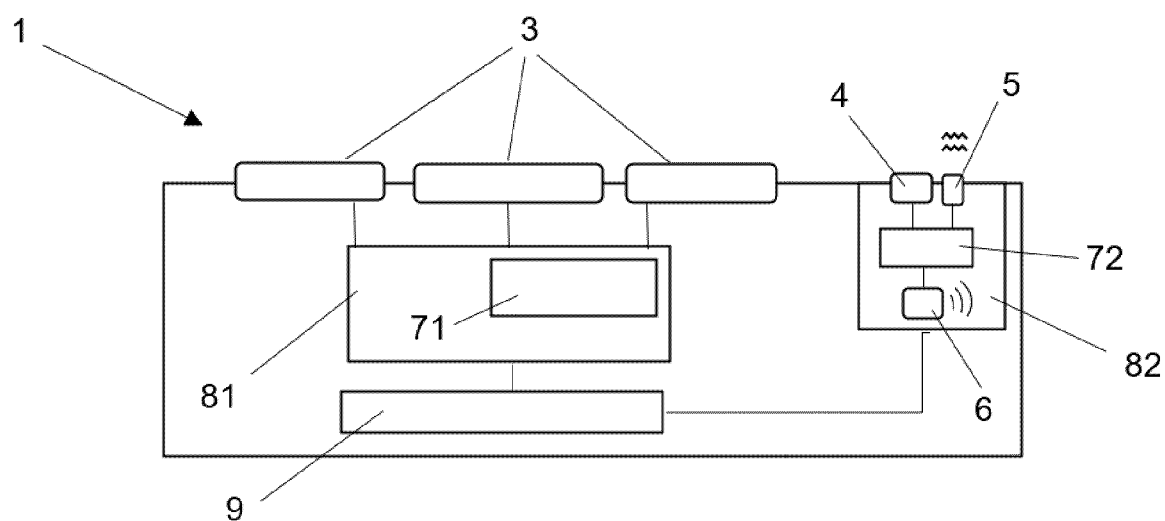


Fig. 5

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 3236709 A1 [0003]
- DE 102012205621 A1 [0003]
- WO 2019209371 A1 [0003]
- EP 3489584 A1 [0003]
- WO 2017013558 A1 [0003]
- US 20170310810 A1 [0004]