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(54) **COOKING HOB**

(57) The invention relates to a cooking hob (1). Such cooking hob (1) comprises at least two cooking zones (6) for placement of cooking dishes, a controller (4) for directing cooking power to the respective cooking zones (6) onto which a respective cooking dish is placed, and a user interface (8) for displaying and inputting a cooking parameter (V) for each one of the cooking zones (6), wherein the user interface (8) comprises a touch screen (10) for displaying and inputting the cooking parameter (V). Further, the cooking hob (1) comprises a vessel detection means for determining the usage status of each one of the cooking zones (6). The controller (4) is configured to, in dependence on the usage status of the cooking zones (6), switch the user interface (8) from a first mode (12) wherein a multiple view and input surface for all cooking zones (6) is displayed, in the case the usage status indicates a usage of more than one cooking zone (6), to a second mode (14) wherein an enlarged view and input surface with a parameter input interface only for the topically used cooking zone (6) is displayed, in the case the usage status indicates the usage of only one cooking zone (6).

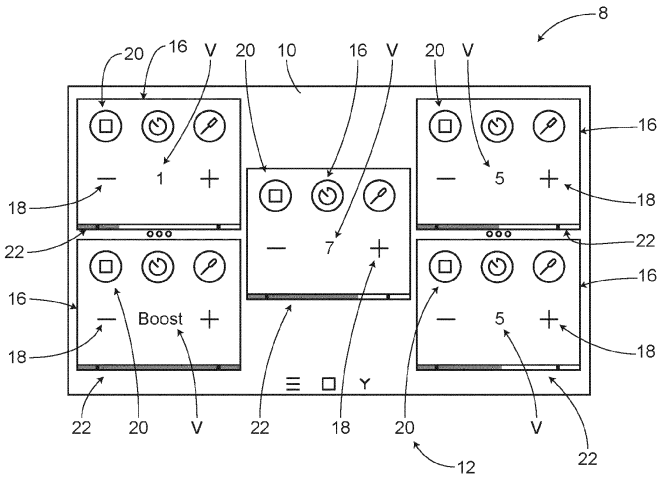

FIG. 2

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Description

[0001] The invention refers to a cooking hob. Preferably, the cooking hob is configured as an induction cooking hob.

[0002] Cooking hobs serve for heating vessels for cooking food like pots, pans etc. Independently on the type of cooking hob - gas, resistance heating or induction heating - the respective hob comprises an interface by which the user can control the energy output ("power level") to the respective vessel. Modern cooking hobs - especially such with a glass ceramics surface - comprise touch sensitive areas or even touch sensitive screens wherein the user may enter the chosen power level, e.g., by touching plus or minus signs and/or some kind of slider like surface area. In the latter case, the user may for example touch a distinct point on a displayed beam or may slide the finger along the beam, thus, moving a virtual slider (e.g., some kind of optical marker) along the "beam".

[0003] Especially in the case of a touch screen, providing distinct single displays for each single cooking zone of the cooking hob is not very efficient.

[0004] Therefore, the object underlying the present invention is to provide an efficient means for displaying and entering the wanted power level of a cooking zone of a cooking hob.

[0005] That object is solved according to the invention by a cooking hob according to claim 1. Additional or even inventive per se embodiments and developments of the invention are laid out by the dependent claims and the following description.

[0006] The cooking hob according to the invention comprises at least two cooking zones for placement of (e.g., respective or different) cooking dishes thereon. The cooking hob further comprises a controller for directing cooking power to the respective cooking zones onto which a respective cooking dish is placed, and a user interface for displaying and inputting a cooking parameter for each one of the cooking zones. The user interface comprises a touch screen (i.e., a touch sensitive screen) for displaying and inputting the cooking parameter. Further, the cooking hob comprises a vessel detection means for determining the usage status of each one of the cooking zones. In other words, the vessel detection means is configured and used to determine whether a vessel (i.e., a cooking dish) is placed on the respective cooking zone. According to the invention, controller is configured to, in dependence on the usage status of the cooking zones, switch the user interface from a first mode wherein a multiple view and (cooking parameter) input surface for all cooking zones is displayed, in the case the usage status indicates a usage of more than one cooking zone, to a second mode wherein an enlarged view and (cooking) parameter input surface with a parameter input interface only for the topically used cooking zone is displayed, in the case the usage status indicates the usage of only one cooking zone.

[0007] Preferably, the user interface shows an enlarged view of a input interface of only one cooking zone if only one vessel is detected (second mode). In the case of the detection of more than one vessel on respective cooking zones, the user interface is switched to a multiple view or overview of all cooking zones, especially with a reduced input interface or reduced input means.

[0008] Preferably, the cooking parameter which may be selected (chosen) and/or amended by the parameter input interface of the first and second modes is a power level of power transferred to the heating elements or transmitted by the heating elements, respectively, during intended use. Especially, thus, the value of the cooking parameter may be inputted through the respective interface.

[0009] Due to the above-described invention, it is possible to use a comparably small touch screen for inputting cooking parameters for more than one cooking zone and also having the possibility to show, by the enlarged view, a more detailed view of the respective input possibilities.

[0010] According to a preferred embodiment, the enlarged view and single input surface of the second mode comprises - especially as the parameter input interface - a beam display (i.e., an area wherein such a beam is displayed) of the setting range of the cooking parameter. The controller is configured, in that case, to accept a sliding or direct touch input to the desired level ("power level") of the cooking parameter. Also, the controller is optionally configured, to accept a touch input to an up or down marker (e.g., a plus and a minus sign) aligned next to the beam display. That makes up for a user-friendly input of the needed power level.

[0011] According to an expedient embodiment, the multiple view and input surface of the first mode comprises a value display of the currently set value of the respective cooking parameter for each one of the cooking zones. In other words, in the first mode an overview is given (shown) of all cooking zones with their topically assigned cooking parameter values (power levels). Further, the respective value display comprises (only) an up and down marker for a touch input for increasing or decreasing the value of the cooking parameter. Especially, the respective up and down markers are configured for stepwise increasing or decreasing the power level. Thus, the first mode enables not only an overview over all cooking zones but also the possibility to change values at least in a rudimentary way.

[0012] According to a further expedient embodiment, the controller is configured to switch the user interface to the first mode if no vessel is present on any of the cooking zones. That may be the case if the user takes off all vessels from the cooking zones or also if the cooking hob is activated without any vessels placed to the cooking zones.

[0013] According to a preferred embodiment, the controller is configured to switch the user interface from the first mode, if a touch input is detected within a predefined area for a specific cooking zone, to the second mode with

the enlarged view and parameter input surface for that specific cooking zone. Thus, the user may choose actively (i.e. by touching the respective area) to use the enlarged view for viewing or entering the power level of the respective cooking zone.

[0014] According to an expedient embodiment, the enlarged view and parameter input surface of the second mode comprises a rudimentary display for the other cooking zone or other cooking zones. Such rudimentary display is preferably configured to display only the topical value of the cooking parameter but without an input possibility of changing the respective value.

[0015] Preferably, the respective rudimentary display is positioned on the touch screen such that the position correspondents to the relative position of the cooking zones among each other.

[0016] According to a further expedient embodiment, the controller is configured to switch the user interface from displaying the enlarged view and parameter input surface for a first one of the cooking zones to display the enlarged view and parameter input surface for a second one of the cooking zones if a touch input is detected within a predefined area, especially the rudimentary display, for that second cooking zone. Thus, the user may switch actively between enlarged view and parameter input surfaces for different cooking zones, especially when these cooking zones are in use with a vessel (dish).

[0017] According to a yet further expedient embodiment, the controller is configured to switch the user interface, if more than one vessel is detected, from the second mode to the first mode after a reset time (or period). Especially, that reset time would only be counted down from the last input to the touch screen and if no other input would occur during the reset time. Such reset time also may be considered as a waiting or pause time. Preferably, the reset time is chosen to be 5 to 10 seconds. That switching effects that the enlarged view and parameter input surface would be set back to the multiple view and parameter input surface in the case no input occurs or that a distinct time has run out since the last input. Especially, that switch-back or reset is enabled also after the placement of an additional vessel has been detected.

[0018] Expediently, in the case of placing an additional vessel to a cooking zone, the enlarged view and parameter input surface is activated for the "new" cooking zone, i.e., onto which a placement of a vessel has been detected, recently. And preferably, if no action appears, the multiple view is activated, again, especially after the above-mentioned reset time.

[0019] In a preferred embodiment, the controller is formed at least in essence by a microcontroller with a processor and a data memory in which the functionality for carrying out the above-mentioned actions according to the invention is implemented by means of an operating software (firmware), so that these actions or steps are carried out automatically - possibly in interaction with the user - when the operating software is executed in the microcontroller. In the context of the invention, the controller can alternatively be formed by a non-programmable electronic component, e.g., an ASIC, in which the functionality for carrying out those actions or steps according to the invention is implemented by circuitry means.

[0020] The conjunction "and/or" is to be understood here and in the following in particular in such a way that the features linked by means of this conjunction can be formed both together and as alternatives to each other.

[0021] In the following, an embodiment of the invention is explained in more detail with reference to a drawing. Therein show:

Fig. 1 in a schematic perspective view a cooking hob,
Fig. 2 in a schematic detail a user interface of the cooking hob in a first mode, and
Fig. 3 in a view as Fig. 2 the user interface in a second mode.

[0022] Parts corresponding to each other are always provided with the same reference signs in all figures.

[0023] Fig. 1 shows a cooking hob 1 - without kitchen furniture where the cooking hob 1 is mounted to in its intended use state. The cooking hob 1 comprises a glass ceramics surface 2, heating elements (not shown) mounted there below and a controller 4 for controlling and diverting power provided to the heating elements. In the present embodiment, the heating elements are inductive heaters. The cooking hob 1 comprises at least two cooking zones 6, here five cooking zones 6, whereupon different cooking dishes (or vessels) may be placed during intended operation of the cooking hob 1.

[0024] Further, the cooking hob 1 comprises a user interface 8 for displaying and inputting a cooking parameter V (i.e., a power level) for each one of the cooking zones 6. The user interface 8 comprises a touch screen 10 for displaying and inputting the cooking parameter V. Additionally, the cooking hob 1 comprises a vessel detection means (not shown) for determining the usage status of each one of the cooking zones 6, i.e., whether a vessel (e.g., a pot or pan) is placed on the respective cooking zone 6. That vessel detection means may be a sensor or circuitry that may detect the presence of an object that reacts to inductive energy transfer. Such vessel detection means are known in the art.

[0025] The controller 4 comprises a microcontroller with an assigned memory and is (by a software module) configured to also control the user interface 8. The controller 4 is, therefore, configured to react to user inputs via the touch screen 10 and control the heating elements in response to the user inputs by raising or decreasing power levels assigned to the respective heating element. The user interface 8 is a central user interface 8 for all of the five cooking zones 6, i.e., the cooking zones 6 do not have an assigned input field in their respective vicinity on the glass ceramics surface 2. This enables a compact design of the cooking hob 1 and the user interface 8.

[0026] Further, the controller 4 is configured to switch

the user interface 8 from a first mode 12 wherein a multiple view and input surface for all cooking zones 6 is displayed to a second mode 14 wherein an enlarged view and input surface with a (cooking parameter V) input interface only for the topically used cooking zone 6 is displayed (s. Fig. 2, 3). That switching between the first mode 12 and the second mode 14 is performed in dependence on the usage status of the cooking zones 6. For that, the controller 4 is configured to monitor by means of the vessel detection means if a vessel is placed on one or more than one cooking zone 6. In the case the usage status indicates a usage of more than one cooking zones 6 (i.e., two or more vessels are placed on respective cooking zones 6), the controller 4 activates the first mode 12. In the case the usage status indicates the usage of only one cooking zone 6 the controller 4 activates the second mode 14.

[0027] Within the first mode 12 (s. Fig. 2), for each cooking zone 6 a reduced picture 16 is displayed showing the topically assigned cooking parameter V, e.g. one of a integer from 0 to 9 and a "boolean" value "boost", the latter indicating the setting of maximum power level. Additionally, the pictures 16 show an up and down marker 18 (plus and minus signs) on both sides to the cooking parameter V. A touch to the respective up or down marker 18 would result in increasing or decreasing the (value of the) cooking parameter V. Further input options are displayed, e.g., a stop button 20 for deactivating the respective cooking zone 6, as well as an optical indication of the chosen cooking parameter V (i.e. the chosen power level) by means of a bar diagram 22. The respective pictures 16 are aligned corresponding to the position respective cooking zone 6 on the glass ceramics surface 2.

[0028] Within the second mode 14 (s. Fig. 3), an enlarged picture 24 is displayed (only) for the cooking zone 6 which is occupied with a vessel. The enlarged picture 24 shows a sliding bar 26 (or: "beam display") with a scale 28 showing the single power levels (or values of the cooking parameters V). A user can touch a distinct power level value or slide a marker 30 (here, a point) along the sliding bar 26 to choose the value of the cooking parameter V. In the present embodiment, the enlarged picture 24 also shows the position of the respective cooking zone 6 relative to the other cooking zones 6 by a pictogram 32. Additionally, within the second mode 14 reduced pictures 34 are shown for the remaining cooking zones 6. These reduced pictures 34 only show the respectively chosen value of the cooking parameter V but do not offer means for changing any settings to these cooking zones 6.

[0029] The enlarged picture 24 is shown either for the only one cooking zone 6 that is active and occupied with a vessel or for an active cooking zone 6 that has been chosen by the user to be displayed or even for the cooking zone 6 onto which a vessel has been positioned, topically. E.g., there are all cooking zones 6 active (as in Fig. 3) and the user wants to control one of these cooking zones 6 in more detail. Then, the user may, within the first mode 12, touch one of the reduced pictures 16. In that case, the controller 4 activates the second mode 14 and displays the enlarged picture 24 for the cooking zone 6 the user has chosen by touching the reduced picture 16. Also, if a vessel has been positioned topically to a cooking zone 6, the enlarged picture 24 is activated for that cooking zone 6. Especially, in the later case (or alternatively in every case), the controller 4 will reset the second mode 14 to the first mode 12 after a reset time (or waiting time) of about 6 seconds if no input is made to the enlarged picture 24 during that period.

[0030] The subject matter of the invention is not limited to the embodiment example described above. Rather, further embodiments of the invention can be derived by the skilled person from the above description.

List of reference signs

[0031]

1	cooking hob
2	glass ceramics surface
4	controller
6	cooking zone
8	user interface
10	touch screen
12	first mode
14	second mode
16	picture
18	up and down marker
20	stop button
22	bar diagram
24	picture
26	sliding bar
28	scale
30	marker
32	pictogram
34	picture

V cooking parameter

Claims

1. Cooking hob (1), comprising

- at least two cooking zones (6) for placement of cooking dishes,
- a controller (4) for directing cooking power to the respective cooking zones (6) onto which a respective cooking dish is placed,
- a user interface (8) for displaying and inputting a cooking parameter (V) for each one of the cooking zones (6), wherein the user interface (8) comprises a touch screen (10) for displaying and inputting the cooking parameter (V), and
- a vessel detection means for determining the usage status of each one of the cooking zones (6),

wherein the controller (4) is configured to, in dependence on the usage status of the cooking zones (6), switch the user interface (8) from a first mode (12) wherein a multiple view and input surface for all cooking zones (6) is displayed, in the case the usage status indicates a usage of more than one cooking zone (6), to a second mode (14) wherein an enlarged view and input surface with a parameter input interface only for the topically used cooking zone (6) is displayed, in the case the usage status indicates the usage of only one cooking zone (6).

2. Cooking hob (1) according to claim 1, wherein within the second mode (14) the enlarged view and input surface comprises a beam display (26) of the setting range of the cooking parameter (V), wherein the controller (4) is configured to accept a sliding or direct touch input to the desired level of the cooking parameter (V).

3. Cooking hob (1) according to claim 2, wherein within the second mode (14) the controller (4) is configured to accept a touch input to a up or down marker () aligned next to the beam display (26).

4. Cooking hob (1) according to one of claims 1 to 3, wherein within the first (12) mode the multiple view and input surface comprises a value display of the currently set value of the respective cooking parameter (V) for each one of the cooking zones (6), the respective value display comprising only an up and down marker (18) for a touch input for increasing or decreasing the value of the cooking parameter (V).

5. Cooking hob (1) according to one of claims 1 to 4, wherein the controller (4) is configured to switch the user interface (8) to the first mode (12) if no vessel is present on any of the cooking zones (6).

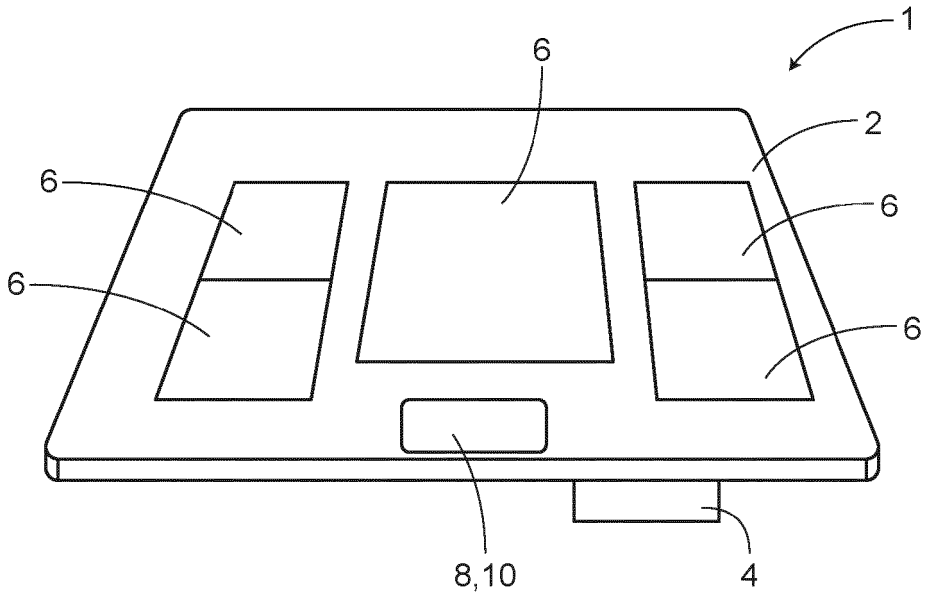
6. Cooking hob (1) according to one of claims 1 to 5, wherein the controller (4) is configured to switch the user interface (8) from the first mode (12), if a touch input is detected within a predefined area for a specific cooking zone (6), to the second mode (14) with the enlarged view and parameter input surface for that specific cooking zone (6).

7. Cooking hob (1) according to one of claims 1 to 6, wherein the enlarged view and parameter input surface of the second mode (14) comprises a rudimentary display (34) for the other cooking zone (6) or other cooking zones (6), the reduced display (34) being configured to display only the topical value of the cooking parameter (V) but without an input possibility of changing the respective value.

8. Cooking hob (1) according to one of claims 1 to 7, wherein the controller (4) is configured to switch the user interface (8) from displaying the enlarged view and parameter input surface for a first one of the cooking zones (6) to display the enlarged view and input surface for a second one of the cooking zones (6) if a touch input is detected within a predefined area, especially the rudimentary display (34), for that second cooking zone (6).

9. Cooking hob (1) according to claim 7 or 8, wherein the controller (4) is configured to switch the user interface (8), if more than one vessel is detected, from the second mode (14) to the first mode (12) after a reset time, especially after 5 to 10 seconds.

10. Cooking hob (1) according to one of claims 1 to 9, wherein the controller (4) is configured to control the user interface (8) to display the enlarged view and parameter input surface for the cooking zone (6) onto which a placement of a vessel has been detected, recently.


1
6
2
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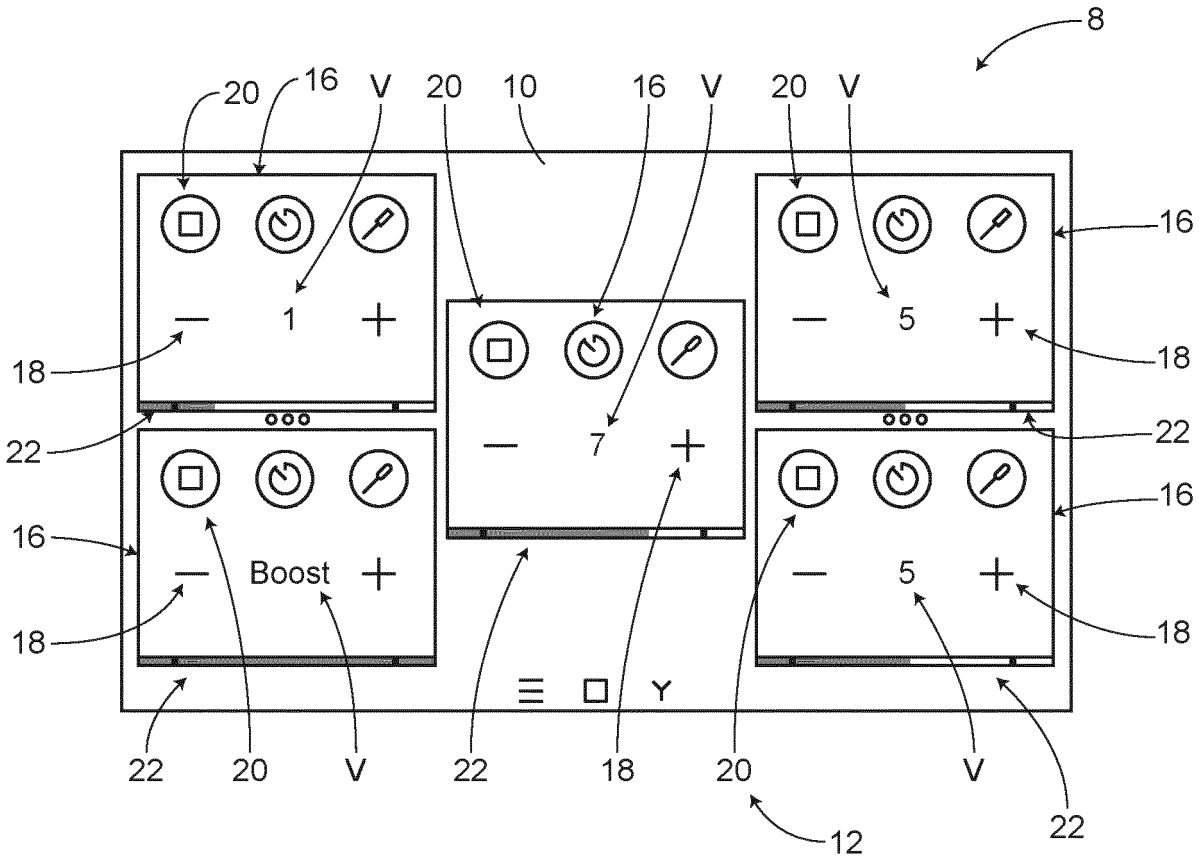
6
6
8,10
4

FIG. 1


8
20
16
V
20
10
16
V
20
V
16
18
1
5
18
22
7
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16
Boost
5
18
18
22
20
V
22
18
20
V
22
12

FIG. 2

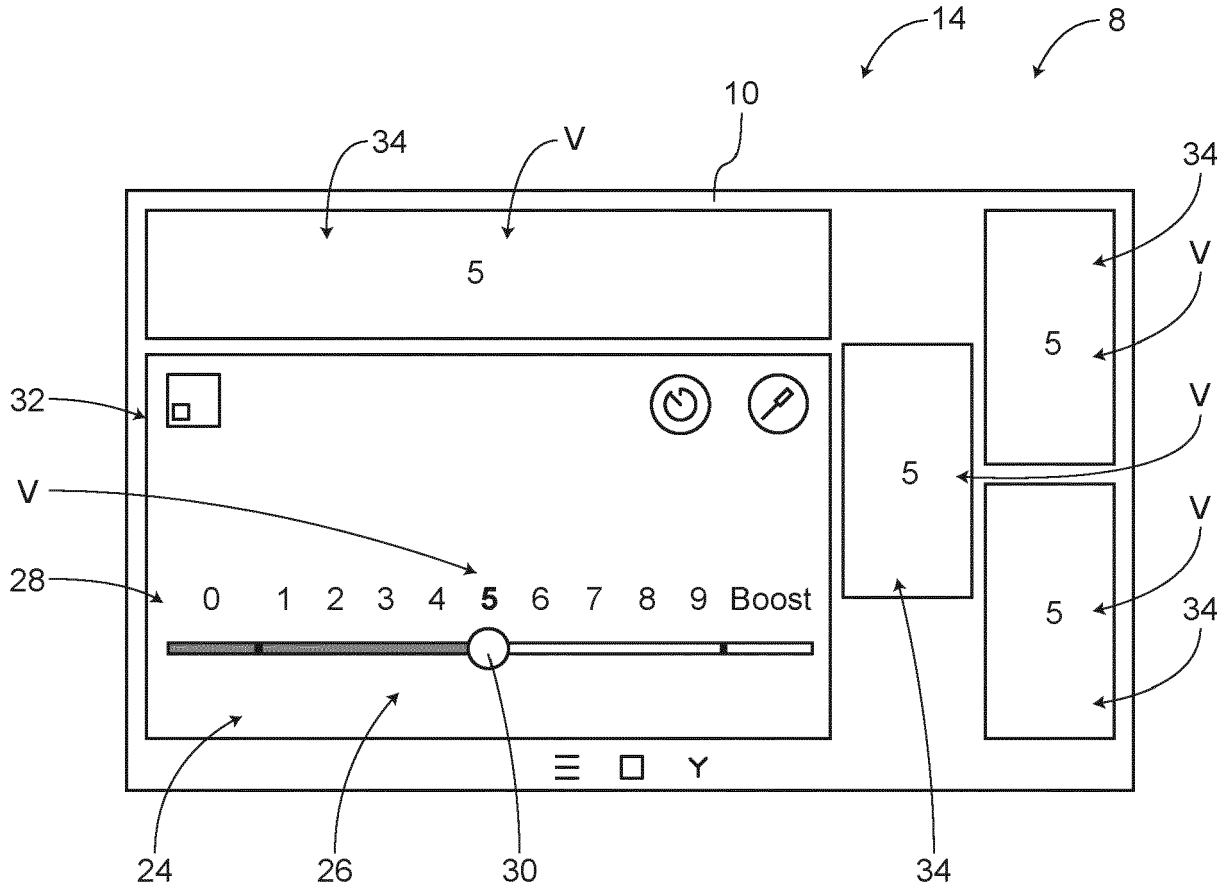

FIG. 3

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EUROPEAN SEARCH REPORT

Application Number
EP 23 18 2583

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2017/285926 A1 (BRASSEUR JÉRÔME [SE] ET AL) 5 October 2017 (2017-10-05) * paragraphs [0015], [0032] - [0035]; figures 1,2,3a,3b,3c *	1-10	INV. H05B6/12 F24C7/08
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A	WO 2016/010490 A1 (ARÇELIK ANONIM SIRKETI [TR]) 21 January 2016 (2016-01-21) * figure 4 *	1-10	

TECHNICAL FIELDS SEARCHED (IPC)

H05B
F24C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	1 December 2023	Pierron, Christophe

CATEGORY OF CITED DOCUMENTS

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