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(54) Control for equipment

(57) The present invention relates to a control for setting appliances in order to effect a desired operation thereof, which control comprises: at least one function key; a control circuit; and transfer means for transferring data required for adjustment, wherein the control is distinguished by a screen and at least two input organs, the effect of which depends on setting options which are displayed on the screen and which are defined by preceding settings.

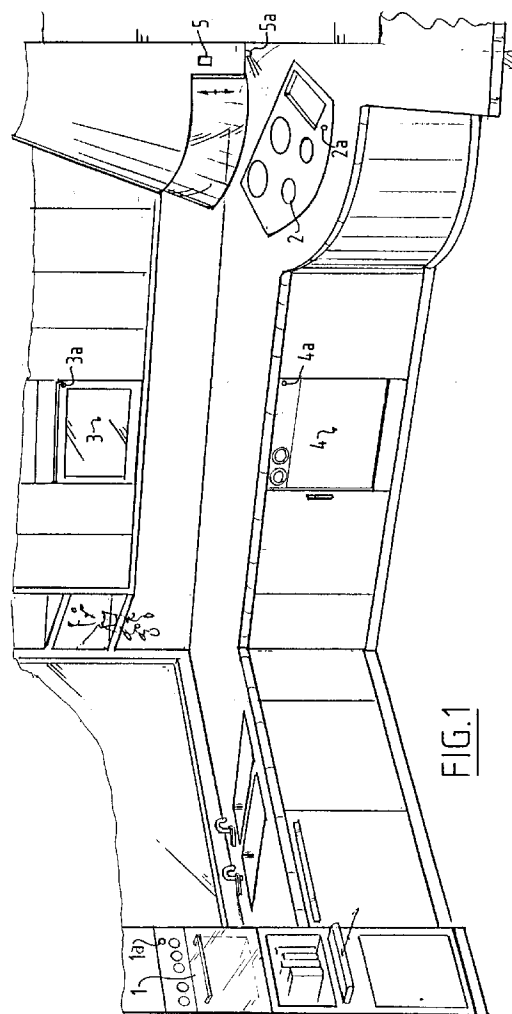


FIG. 1

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Description

The present invention relates to a control for adjusting equipment, in order to effect a desired operation thereof, which control comprises: at least one function key; a control circuit; and transfer means for transferring data required for adjustment.

Such a control has the drawback that in order to adjust modern equipment provided with a large number of setting options, a control with a very large number of function keys is required, since each of these function keys has one predetermined effect on the adjustment.

A further drawback of such a known control is that when it is intended for adjustment of more than one appliance, wherein each of the appliances for adjusting is again provided with a large number of setting options, the number of function keys required is even larger than in the case of a control for one appliance. Such a known control hereby becomes not only very bulky, but the use hereof becomes time-consuming as a result of the large number of function keys, and is thus very user-unfriendly.

In addition, application of such a prior art control has heretofore not been possible in kitchens as a result of the large number of setting options of the equipment for adjusting arranged in a kitchen and as a result of the increasing number of appliances for adjusting in kitchens.

The invention has for its object to obviate the above stated drawbacks and provides for this purpose a control which is distinguished by a screen and at least two input organs, the effect of which depends on setting options which are displayed on the screen and which are defined by preceding settings.

The input organs are further placed close to the screen in a preferred embodiment, wherein the effect of each option key depends on setting options displayed at a corresponding location on the screen. Another feature of a control according to the present invention is a memory element connected to the control circuit, in which a program is stored, which program controls the setting steps to be performed in order to adjust an appliance. In the case of a control suitable for setting more than one appliance, the memory element contains a program which controls the progress through the setting steps required for the appliance to be set.

Kitchen equipment provided with such a control forms part of the invention.

With a control according to the invention it is possible to set appliances requiring a wide diversity of settings. However, setting herein remains very simple and clear.

Such convenience of operation in kitchen applications is particularly desirable nowadays, since in addition to the housewife, who traditionally was the only one familiar with the kitchen, many other users have become active in the kitchen. The total user group therefore comprises very diverse user levels, wherein a control ac-

cording to the present invention is very desirable.

The invention is further elucidated with reference to the figure description hereinbelow of an embodiment of the invention. In the drawing:

Fig. 1 shows a kitchen in which is disposed a plurality of appliances for adjustment;

Fig. 2 shows an embodiment, partly in the form of a block diagram, of a control according to the invention; and

Fig. 3 shows the screen of the control in one of the setting steps.

The kitchen shown in fig. 1 comprises a plurality of appliances for adjustment, i.e. an oven 1; a hot plate 2; a microwave oven 3; a dishwasher 4; and a cooker hood 5.

Each of the appliances 1-5 is provided with a receiver, respectively 1a, 2a, 3a, 4a and 5a, wherein the receivers 1a-5a are suitable for receiving signals from a control designed as a remote control. The signals are radio waves in the embodiment shown here. In fig. 1 each appliance for adjustment 1-5 is provided with a separate receiver 1a-5a. In another arrangement of the kitchen equipment the receivers 1a-5a are mutually connected. The receiver of one appliance can hereby receive the signals containing the data for setting of any other appliance to be set and transmit these signals via the connection to the appliance to be set, when the signals do not reach the appliance to be set due to intervention of an object. The arrangement can also contain a receiver arranged at a central location, wherein the signals are transmitted to the relevant appliance to be set via this central receiver.

Shown in fig. 2 is a diagram of the structure of a control according to the present invention, which control comprises: function keys designed as push buttons 11; a control circuit 10; transfer means designed as radio-wave transmitter 12; a memory element 13; a screen 15; and input organs embodied as push buttons 14.

In the embodiment shown in this figure, the push buttons 11 as function keys, the memory element 13, the radio-wave transmitter 12, the screen 15 and the push buttons 14 as input organs are connected to the control circuit 10. The input organs 14 are arranged next to the screen 15 at positions which correspond with lines in the screen 15 for showing setting options. The control circuit actuates the radio-wave transmitter 12 to transmit signals containing adjustment data. This data is determined by pressing the function keys 11 and the input organs 14. The memory element 13 contains a program part for each of the appliances to be set, whereby setting takes place in steps. The setting options available in a step are shown on the screen 15. Adjustment is effected by pressing an input organ 14 arranged at a position adjacent to a desired setting option shown on the screen 15 or by pressing a function key 11, which brings about a constant change in the setting.

In addition to the lines for showing the setting options, lines are also available on the screen for showing variables, namely at a position between two adjacent input organs 14, and for showing a status line on which is shown date and time or a previously selected setting option. Using two input organs 14 next to a line for showing a variable, this variable can be increased or decreased subject to that information indicated on the line for showing a setting option corresponding with the two input organs 14. When the control is used for setting kitchen equipment such a variable is for instance time, cooking time or temperature.

The memory element 13 is preferably programmable or exchangeable as a module, so that the control can be made suitable for operating newly acquired appliances to be set.

Fig. 3 shows the screen 15 and the associated input organs 14 during a setting step. Shown in the here centrally depicted status line 20 is the setting which is being adjusted in this setting step. In the case shown in this figure this concerns temperature. The associated variable is shown at top left and the initial setting value amounts here to 175°C. Using the input organs 14 placed in the immediate vicinity of the setting value this latter can be increased or decreased, this being designated with two vertical and opposite arrows 21 and 22, which are shown on the lines for setting options corresponding with the two input organs.

Adjustment of the setting shown in status line 20, here the temperature, is selected during the preceding setting step, whereafter the screen 15 passes to the situation shown in this figure.

When the temperature is set to a desired value using the input organs 14 adjacent to the arrows 21 and 22, a selection can be made for setting times. The case shown in this figure relates to a setting step for setting an oven, wherein a baking program is set. By pressing input organs 14 adjacent to the lines with the setting options "baking time" and "baking finished" in screen 15, the oven can be programmed to commence baking at a time to be determined and to terminate baking at another time to be determined. After pressing one of these input organs 14 a time indication appears on screen 15, which can be altered in the same manner as above for the temperature, whereafter the other of these two setting options can be adjusted. By pressing the input organ 14 associated with the setting option "baking duration", a setting is for instance effected wherein the oven immediately commences and continues the baking process until the set time duration has elapsed. The relevant setting option is then displayed in status line 20. Expressions commonly used in colloquial language are preferably used, for instance "baking" instead of "top and bottom element".

An example of a sequence of setting steps is therefore as follows:

1. activating the control (function key)

a number of appliances, which each can be set with the control, is shown in the display.

2. input choice of appliance to be set (input organ) after input of the desired appliance to be set a number of functions, which can be performed by the appliance, are shown on the screen.

3. input choice of function to be performed by appliance to be set (input organ)

in response a number of quantities is shown in the screen, such as temperatures, at one of which the appliance is required to function, or a single adjustable quantity.

4. input choice of one of the quantities or adjustment of the shown quantity (input organ)

in response a number of time options or a single adjustable time and/or on start- and/or end time is/are shown.

5. input time date (input organ)

after which setting is complete; the appliance to be controlled is supplied with the set data and activated at the desired moment, whereupon the screen returns to a rest state, or displays diagnosis data relating to the functioning of the appliance to be controlled.

The program preferably also contains standard settings for instance for preparing particular dishes, such as boiling potatoes, so that it is not necessary to go through the whole sequence of setting steps.

When an appliance to be set performs a sequence of programmed processes, such as preheating, baking, etc., the process which is being carried out at a specific moment is preferably displayed on status line 20. In a preferred embodiment the control is provided for this purpose with receiving means and the appliances to be set are equipped with transmitting means, so that the appliances in operation can transmit an indication of their status to the control, which subsequently displays such information on the status line of the screen. Such status information is formed in a preferred embodiment by data referring to the status of an appliance to be set, such as a report that a preheating oven has reached the desired temperature, and/or referring to the result of an error diagnosis concerning the functioning of the appliance to be controlled. The appliance to be controlled is provided with means for performing such error diagnosis, which detects faulty operation of the appliance, such as in the case a thermostat is defective or a fuse is blown, wherein a report hereof is also generated on the screen of the control. When the control is not used for setting an appliance to be set and none of the appliances for adjustment is performing a determined process, the status line 20 shows the current date and time.

A control preferably contains a program for setting a number of functions relating to the control itself, such as brightness of the screen, sound volume when auditive signals are used, childproof lock, and the defining of initial settings such as choice of language, default set-

tings for time, temperature, etcetera. It is further possible to use the control according to the present invention as a fully standalone device such as a kitchen timer. The control is preferably suitable to take a user through the required setting steps in a large number of languages, at least Dutch, English, German and French, wherein the choice of language is one of the initial settings of the control which is determined during installation hereof. In addition to the above mentioned modern languages, the control is also suitable to take a user through the said steps in other languages such as Hebrew, Modern Greek or Russian.

In one embodiment a control is formed by a hand-held device, which is portable, i.e. a remote control. In another embodiment the control is however formed by a device arranged at a fixed position, in a kitchen for instance a control console in the worksurface or against the wall, wherein the signals containing the data required for setting are transmitted to the appliances to be set via fixed cable connections. It is herein also conceivable for the appliances to be set to also contain separate, individual adjustment means, for instance for switching on and off or for setting in a standby mode thereof. In addition, it is also possible for a remote control to be coupled temporarily to an appliance to be set, so that during this time the remote control forms the direct setting means for the appliance to be set. After disconnection the remote control can once again function for instance as the central remote control. In the coupled state it is possible according to the invention for the batteries of the remote control to be charged through power supply via the coupling from the appliance to be set. The remote control can also permanently form a part of one of the appliances for adjustment.

In preference, appliances to be set are mutually connected and each provided with a memory element, in which adjustment data is stored. When this setting data is lost in the control, for instance when the batteries run out or the control malfunctions after a fall, the data is still present in this memory element. The setting data for one of the appliances to be set can also be stored in a memory element of one or more than one of the other appliances, so that this data can be transferred to the appliance to be set when this data has been lost here.

As a result of a coupling such as that described above, it is also possible to influence the operation of an appliance without actual setting thereof. It is for instance possible for the air ventilation device formed by a cooker hood to be set automatically into operation when another appliance, such as a hot plate or oven, commences its operation, or a certain time thereafter. The setting of this appliance can then also be made dependent on the mode of operation of another appliance; the cooker hood can thus be adjusted to extract more strongly when the hot plate is set to a higher temperature.

In an alternative embodiment the control according to the present invention is provided with loud speakers

to generate auditive messages concerning setting options, status, error diagnosis, etc.

Also, it is within the scope of the present invention according to the appended claims possible to form the input organs not as push buttons, but for example touch sensitive zones of the screen.

Claims

1. Control for adjusting equipment in order to effect a desired operation thereof, which control comprises: at least one function key; a control circuit; and transfer means for transferring data required for adjustment, **characterized by** a screen and at least two input organs, the effect of which depends on setting options which are displayed on the screen and which are defined by preceding settings.
2. Control as claimed in claim 1, **characterized in that** said input organs are placed adjacent said the screen, wherein the effect of each input organ depends on setting options displayed at a corresponding location on said screen.
3. Control as claimed in claim 1 or 2, **characterized in that** said control is suitable for adjusting more than one appliance.
4. Control as claimed in any of the foregoing claims, **characterized in that** in a setting step said control circuit is adapted to assign a function to an input organ in accordance with setting options displayed on said screen.
5. Control as claimed in any of the foregoing claims, **characterized by** a memory element connected to said control circuit and in which a program is stored, said program controlling adjustment steps to be performed for setting an appliance.
6. Control as claimed in any of the foregoing claims, **characterized by** coupling means for releasably coupling said control to at least one of appliance to be controlled.
7. Control as claimed in any of the foregoing claims, **characterized by** receiving means for receiving signals containing data relating to settings, where said appliance to be set is adapted for generating and transmitting said signals.
8. Kitchen appliance which requires setting by means of setting means in order to operate correctly, such as an appliance for preparing food or for air ventilation, **characterized by** receiving means for receiving data required for setting and transmitted to said appliance by a control as claimed in any of the

foregoing claims, wherein the receiving means are provided with transfer means for transmitting the data to the setting means in order to effect setting of said appliance to be controlled.

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9. Kitchen appliance as claimed in claim 8, **characterized by** transmitting means for transmitting information indicating the status of said appliance to said control.

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10. Kitchen appliance as claimed in claim 8 or 9, **characterized by** a memory element for containing data indicating settings.

11. Kitchen appliance as claimed in claim 9, **characterized by** diagnostic means for determining the status and functioning of said appliance.

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12. System of at least one control according to one of the claims 1-7 and at least two kitchen appliances according to one of the claims 8-11, characterised in that said control and said appliances are connected for mutual exchange of setting data.

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13. System as claimed in claim 12, characterised in that another appliance than the one to be set is adapted for adjusting the function thereof to the set function of the appliance to be set.

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14. System as claimed in claim 12 or 13, characterised in that said appliances are only connected to said control.

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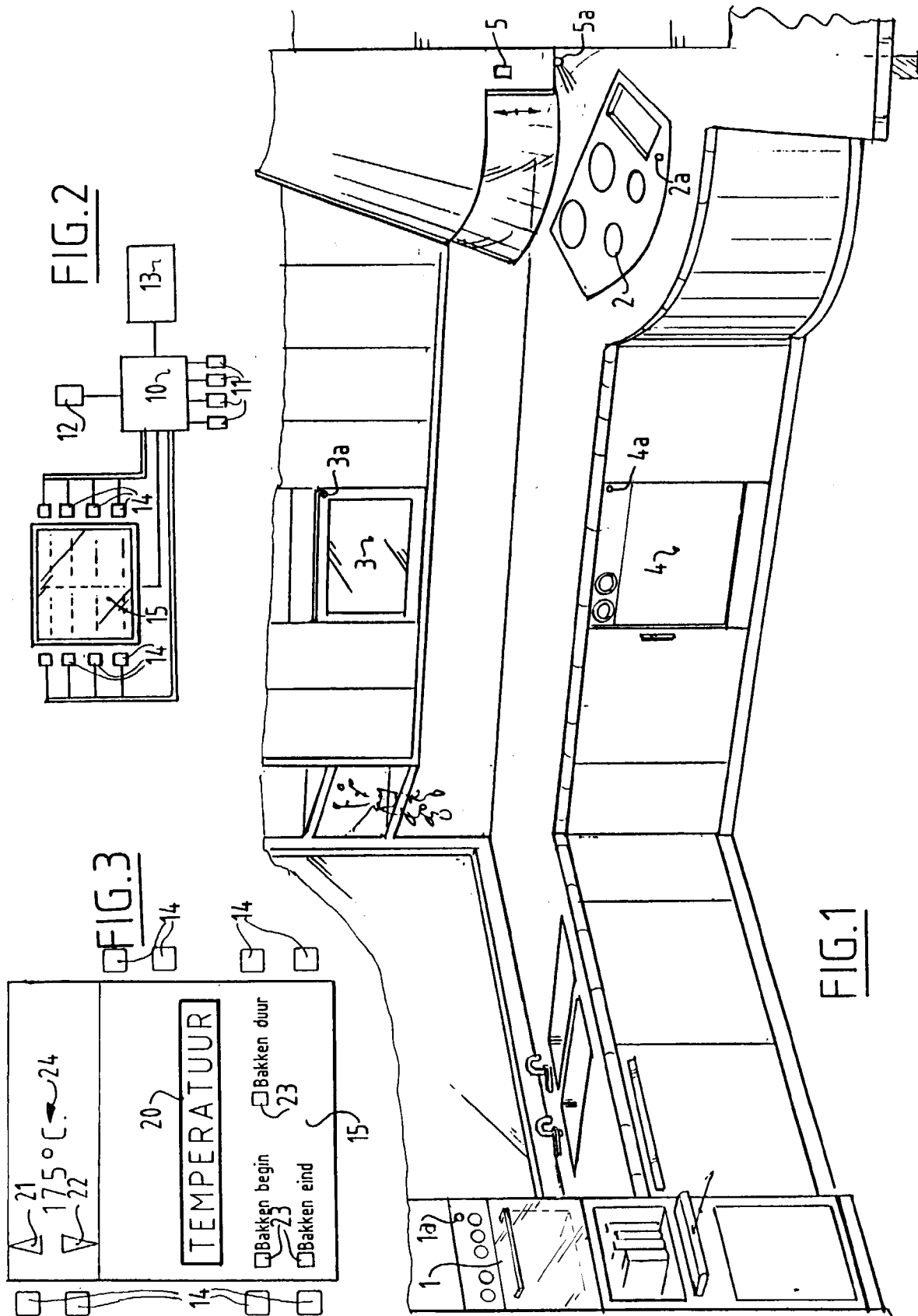
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EUROPEAN SEARCH REPORT

Application Number
EP 96 20 1122

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
Y	DE-A-40 10 998 (DIEHL GMBH & CO) 17 October 1991 * column 2, line 49 - column 3, line 55; figure 1 *	1-12,14	F24C7/08
Y	DE-A-36 28 333 (BAYERISCHE MOTOREN WERKE AG) 3 March 1988 * column 3, line 34 - column 4, line 10; figure 1 *	1-12,14	
Y	DE-A-42 29 731 (SEPPELFRICKE GEB GMBH) 15 April 1993 * the whole document *	3,6,12,14	
Y	EP-A-0 314 558 (EUROP EQUIP MENAGER) 3 May 1989 * claims 1-7; figures 1,2 *	5,10	
Y	EP-A-0 619 568 (WHIRLPOOL CO) 12 October 1994 * page 7, column 12, line 7 - page 9, column 15, line 23; figures 1-3 *	7-11	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			F24C G06F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 26 June 1996	Examiner Wanzeele, R
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