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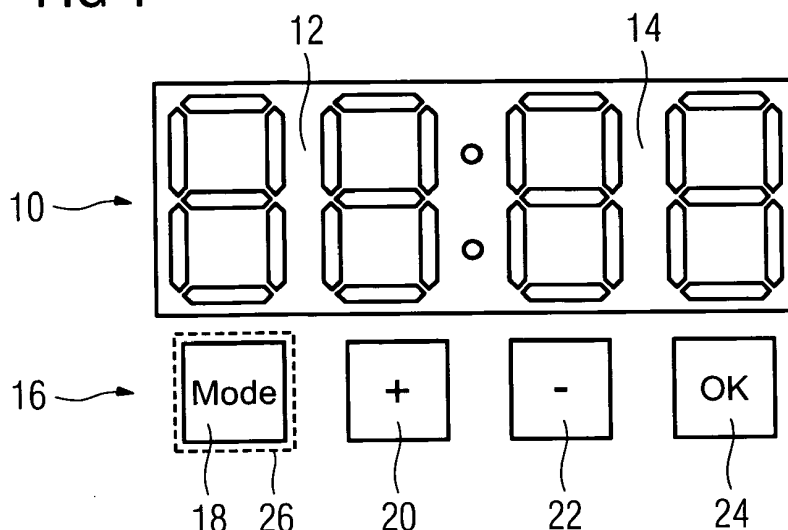
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(54) **A clock timer for a domestic appliance**

(57) The present invention relates to a clock timer for a domestic appliance. The clock timer is adapted to the setting of a numerical value of a time period by a user. The clock timer includes a display device (10), a keyboard (16) and a control unit. The display device (10) comprises at least two display portions (12, 14). One display portion (12) displays a numerical value of the hours of the time period. A further display portion (14) displays a numerical value of the minutes of the time period. The keyboard (16) comprises a mode selection key (18) for selecting between a basic mode, a setting mode for the numerical value of the hours and a further setting mode for the numerical value of the minutes. The keyboard (16) comprises a switch-up key (20) for increasing the displayed numerical values of the hours and the minutes, respectively. The keyboard (16) comprises a switch-down key (22) for decreasing the displayed numerical values of the hours and the minutes, respectively. The keyboard (16) comprises a confirmation key (24) for confirming the displayed numerical values of the hours and the minutes, respectively. The basic mode, the setting mode for the numerical value of the hours and the setting mode for the numerical value of the minutes are recognizable by at least two different optical signals (26, 28) in the display (10) and/or in the keyboard (16). Further, the present invention relates to a domestic appliance with a corresponding clock timer.

prises a switch-up key (20) for increasing the displayed numerical values of the hours and the minutes, respectively. The keyboard (16) comprises a switch-down key (22) for decreasing the displayed numerical values of the hours and the minutes, respectively. The keyboard (16) comprises a confirmation key (24) for confirming the displayed numerical values of the hours and the minutes, respectively. The basic mode, the setting mode for the numerical value of the hours and the setting mode for the numerical value of the minutes are recognizable by at least two different optical signals (26, 28) in the display (10) and/or in the keyboard (16). Further, the present invention relates to a domestic appliance with a corresponding clock timer.

FIG 1



Description

[0001] The present invention relates to a clock timer for a domestic appliance. Further, the present invention relates to a domestic appliance with at least one clock timer.

[0002] The duration of some procedures in domestic appliances can be controlled by a clock timer. For example, cooking procedures can be advantageously controlled by the clock timer. The user sets a predetermined time period before the procedure starts. The clock timer is connected to a control unit of the domestic appliances. After the time period set by the user has been finished, the procedure stops automatically.

[0003] EP 0 056 335 B1 discloses a cooking appliance with a clock timer including a display device and a keyboard. The user can set a predetermined time corresponding with the duration of cooking process. However, the keyboard comprises a high number of keys, so that the clock timer is very complex. Further, it is not easy for the user to set up the predetermined time.

[0004] It is the object of the present invention to provide an improved clock timer for a domestic appliance and a corresponding domestic appliance with at least one clock timer, wherein the setting of the time period is an easy operation and the clock timer has a low complexity.

[0005] This object is achieved by the clock timer for a domestic appliance according to claim 1.

[0006] The present invention relates to a clock timer for a domestic appliance, wherein:

- the clock timer is provided for setting a numerical value of a time period by a user,
- the clock timer includes a display device, a keyboard and a control unit,
- the display device comprises at least two display portions,
- one display portion displays a numerical value of the hours,
- a further display portion displays a numerical value of the minutes,
- the keyboard comprises a mode selection key for selecting between a basic mode, a setting mode for the numerical value of the hours and a further setting mode for the numerical value of the minutes,
- the keyboard comprises a switch-up key for increasing the displayed numerical values of the hours and the minutes, respectively,
- the keyboard comprises a switch-down key for decreasing the displayed numerical values of the hours and the minutes, respectively,
- the keyboard comprises a confirmation key for confirming the displayed numerical values of the hours and the minutes, respectively, and
- the basic mode, the setting mode for the numerical value of the hours and the setting mode for the numerical value of the minutes are recognizable by at least two different optical signals in the display and/or

in the keyboard.

[0007] The core idea of the present invention is the setting of the hours and minutes in different steps by the same keys. The separate setting of the hours and minutes by switch-up key and switch-down key allows a fast setting up of the desired time period. The use of the same switch-up key and the same switch-down key for setting the hours as well as the minutes allows a simple operation and contributes to a low complexity of the clock timer.

[0008] According to a preferred embodiment of the present invention the display portions display the numerical values of the hours and the minutes of the time period by a two-digit number in each case.

[0009] In particular, the control unit may confirm automatically the displayed numerical values of the hours and the minutes, respectively, in one of the setting modes, if the confirmation key has not been operated within a predetermined holding time. Thus, the time period can also be set, if the user forgets the operation of the confirmation key.

[0010] Preferably, the predetermined holding time is between one and two seconds. For example, the predetermined holding time is one and a half seconds.

[0011] Further, in the basic mode the mode selection key can respond to an operation by the user, whereas the switch-up key, the switch-down key and the confirmation key are deactivated in the basic mode. This excludes faulty operation steps.

[0012] By a similar way, in the setting modes the switch-up key, the switch-down key and the confirmation key can respond to an operation by the user, whereas the mode selection key is deactivated in the setting modes.

[0013] The optical signals for the keys may be realized by an illumination or a blinking light behind, below, besides and/or around said keys. Further, the optical signals for the display portions may be realized by a blinking light of the two-digit numbers in each case.

[0014] According to the preferred embodiment of the present invention the setting mode for the numerical value of the hours can be activated in the setting mode for the numerical value of the minutes by sufficient operations of the switch-up key, so that the numerical value of the minutes exceeds the value "60". This feature simplifies the operation of the clock timer.

[0015] Further, the display device comprises an additional display portion for displaying the seconds of the time period. This allows a more exact setting of the time period.

[0016] The object of the present invention is further achieved by a domestic appliance according to the claim 12.

[0017] The domestic appliance according to the present invention comprises at least one clock timer as described above.

[0018] The invention will be explained in more detail below by means of an exemplary embodiment. Refer-

ence is thereby made to the accompanied drawings, wherein

FIG 1 illustrates a schematic front view of a clock timer in a basic state according to a preferred embodiment of the present invention,

FIG 2 illustrates a schematic front view of the clock timer in a first setting mode according to the preferred embodiment of the present invention, and

FIG 3 illustrates a schematic front view of the clock timer in a second setting mode according to the preferred embodiment of the present invention.

[0019] FIG 1 illustrates a schematic front view of a clock timer in a basic state according to a preferred embodiment of the present invention. The clock timer includes a display device 10, a keyboard 16 and a control unit, which is not shown.

[0020] The display device 10 illustrates a numerical value of a time period. The display device 10 comprises two display portions 12 and 14. The one display portion 12 illustrates a numerical value of the hours of the time period. The other display portion 14 illustrates a numerical value of the minutes of the time period. In this example, each of the display portions 12 and 14 illustrates a double-digit number.

[0021] The keyboard 16 comprises a mode selection key 18, a switch-up key 20, a switch-down key 22 and a confirmation key 24. In this example, the mode selection key 18, the switch-up key 20, the switch-down key 22 and the confirmation key 24 are arranged in a row below the display device 10.

[0022] Those keys, which respond to an operation, i.e. a touch by the user, are recognizable by an optical signal 26. Said optical signal 26 may be realized by an illumination or by a blinking light behind, above, below, besides and/or around said key. In the drawings the optical signals 26 are represented by dashed frames enclosing the corresponding key. In FIG 1 the dashed frame encloses the mode selection key 18. Thus, in the basic state of the clock timer only the mode selection key 18 responds to an operation by the user.

[0023] In order to set the clock timer, at first the user has to operate the mode selection key 18, until one of the two display portions 12 and 14 is marked by an optical signal 28 as shown in FIG 2. Said optical signal 28 may also be realized by an illumination of the display portion 12 or 14 or by a blinking light behind, above, below, besides and/or around the display portions 12 or 14. Preferably, the optical signal 28 is a blinking light of the two-digit number. The numerical value of the marked display portion 12 or 14 can be increased by the switch-up key 20 or decreased by the switch-down key 22.

[0024] In an alternative embodiment, the switch-up key 20 and the switch-down key 22 may be formed as one

key, which is tiltable in two different directions corresponding to the functions of the switch-up key 20 and the switch-down key 22, respectively. According to another alternative embodiment, the switch-up key 20 and the switch-down key 22 may be formed as a rotary switch, wherein each rotating direction of said rotary switch corresponds to the functions of the switch-up key 20 and the switch-down key 22, respectively.

[0025] FIG 2 illustrates a schematic front view of the clock timer in a first setting mode according to the preferred embodiment of the present invention. Said first setting mode has been activated after operating the mode selection key 18 by the user. The first setting mode relates to the change of the numerical value of the minutes illustrated by the display portion 14.

[0026] Since the switch-up key 20, the switch-down key 22 and the confirmation key 24 respond to an operation by the user in the first setting mode, the switch-up key 20, the switch-down key 22 and the confirmation key 24 are marked by the optical signal 26.

[0027] In a similar way, the display portion 14 for the value of the minutes is marked by an optical signal 28, after operating the mode selection key 18 by the user. Preferably, the optical signal 28 is a blinking light of the two-digit number. Alternatively, the optical signal 28 may be an illumination of the display portion 14 or a blinking light behind, above, below, besides and/or around the display portion 14.

[0028] After operating the switch-up key 20 or the switch-down key 22 by the user, the blinking light of the two-digit number is interrupted for a predetermined holding time. If no key is operated during said holding time, then the blinking light of the two-digit number is activated again. According to the preferred embodiment of the present invention, said holding time is one and a half seconds.

[0029] After operating the confirmation key 24 by the user, the display portion 12 for the value of the hours is marked by the optical signal 28, which is the blinking light of the two-digit number as shown in FIG 3. Now, the user can change of the numerical value of the hours.

[0030] Alternatively, the user can set the complete time period, i.e. the minutes as well as the hours, within the first setting mode by operating the switch-up key 20 until the numerical value exceeds the value "60".

[0031] If the user operates the mode selection key 18 in the first setting mode, then the clock timer and the display device 10 are switched into the next setting mode, e.g. the end of the setting modes.

[0032] If the user waits in the first setting mode, then automatically the basic state of the clock timer and the display device 10 is activated and the set time period is assumed.

[0033] FIG 3 illustrates a schematic front view of the clock timer in a second setting mode according to the preferred embodiment of the present invention. The second setting mode relates to the change of the numerical value of the hours.

[0034] In the second setting mode the display portion 12 for the value of the hours is marked by the optical signal 28, i.e. the blinking light of the two-digit number. The switch-up key 20, the switch-down key 22 and the confirmation key 24 are marked by the optical signal 26.

[0035] By the operation of the switch-up key 20 and/or the switch-down key 22 by the user, the numerical value of the hours can be set. During the setting of said numerical values the optical signal 28, i.e. the blinking light of the two-digit number, is interrupted. If none of the keys is operated during the predetermined holding time, which is preferably one and a half seconds, then the blinking light of the two-digit number is started again.

[0036] By operating the confirmation key 24 the clock timer and the display device 10 are switched into the basic state. If the user waits in the second setting mode, then automatically the basic state of the clock timer and the display device 10 is activated and the set time period is assumed.

[0037] Although an illustrative embodiment of the present invention has been described herein with reference to the accompanying drawings, it is to be understood that the present invention is not limited to this precise embodiment, 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.

List of Reference Numerals

[0038]

- 10 display device
- 12 display portion for the value of the hours
- 14 display portion for the value of the minutes
- 16 key board
- 18 mode selection key
- 20 switch-up key
- 22 switch-down key
- 24 confirmation key
- 26 optical signal for the key
- 28 optical signal for the display portion

Claims

1. A clock timer for a domestic appliance, wherein:

- the clock timer is provided for setting a numerical value of a time period by a user,
- the clock timer includes a display device (10), a keyboard (16) and a control unit,
- the display device (10) comprises at least two display portions (12, 14),
- one display portion (12) displays a numerical value of the hours of the time period,
- a further display portion (14) displays a numerical value of the minutes of the time period,
- the keyboard (16) comprises a mode selection key (18) for selecting between a basic mode, a setting mode for the numerical value of the hours and a further setting mode for the numerical value of the minutes,
- the keyboard (16) comprises a switch-up key (20) for increasing the displayed numerical values of the hours and the minutes, respectively,
- the keyboard (16) comprises a switch-down key (22) for decreasing the displayed numerical values of the hours and the minutes, respectively,
- the keyboard (16) comprises a confirmation key (24) for confirming the displayed numerical values of the hours and the minutes, respectively, and
- the basic mode, the setting mode for the numerical value of the hours and the setting mode for the numerical value of the minutes are recognizable by at least two different optical signals (26, 28) in the display (10) and/or in the keyboard (16).

2. The clock timer according to claim 1, **characterized in that**

the display portions (12, 14) display the numerical values of the hours and the minutes of the time period by a two-digit number in each case.

3. The clock timer according to claim 1 or 2, **characterized in that**

the control unit confirms automatically the displayed numerical values of the hours and the minutes, respectively, in one of the setting modes, if the confirmation key (24) has not been operated within a predetermined holding time.

4. The clock timer according to claim 3, **characterized in that**

the predetermined holding time is between one and two seconds.

5. The clock timer according to claim 3 or 4, **characterized in that**

the predetermined holding time is one and a half seconds.

6. The clock timer according to any one of the preceding

claims,

characterized in that

in the basic mode the mode selection key (18) can respond to an operation by the user, whereas the switch-up key (20), the switch-down key (22) and the confirmation key (24) are deactivated in the basic mode. 5

7. The clock timer according to any one of the preceding claims, 10

characterized in that

in the setting modes the switch-up key (20), the switch-down key (22) and the confirmation key (24) can respond to an operation by the user, whereas the mode selection key (18) is deactivated in the setting modes. 15

8. The clock timer according to any one of the preceding claims, 20

characterized in that

the optical signals (26) for the keys are realized by an illumination or a blinking light behind, below, besides and/or around said keys (18, 20, 22, 24).

9. The clock timer according to any one of the claims 2 to 8, **characterized in that** 25

the optical signals (28) for the display portions (12, 14) are realized by a blinking light of the two-digit numbers in each case. 30

10. The clock timer according to any one of the preceding claims, 35

characterized in that

the setting mode for the numerical value of the hours can be activated in the setting mode for the numerical value of the minutes by sufficient operations of the switch-up key (20), so that the numerical value of the minutes exceeds the value "60". 40

11. The clock timer according to any one of the preceding claims, 45

characterized in that

the display device (10) comprises an additional display portion for displaying the seconds of the time period. 50

12. A domestic appliance with at least one clock timer, **characterized in that**

the domestic appliance includes at least one clock timer according to any one of the preceding claims 1 to 11. 55

FIG 1

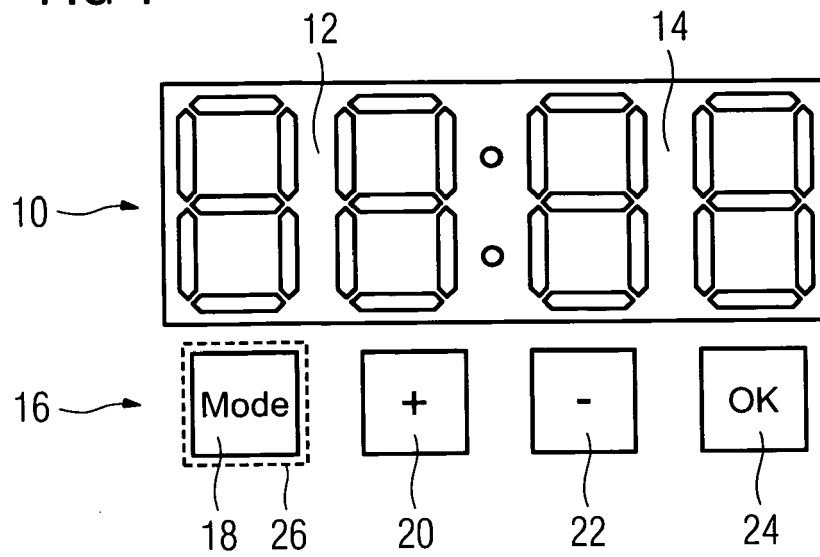


FIG 2

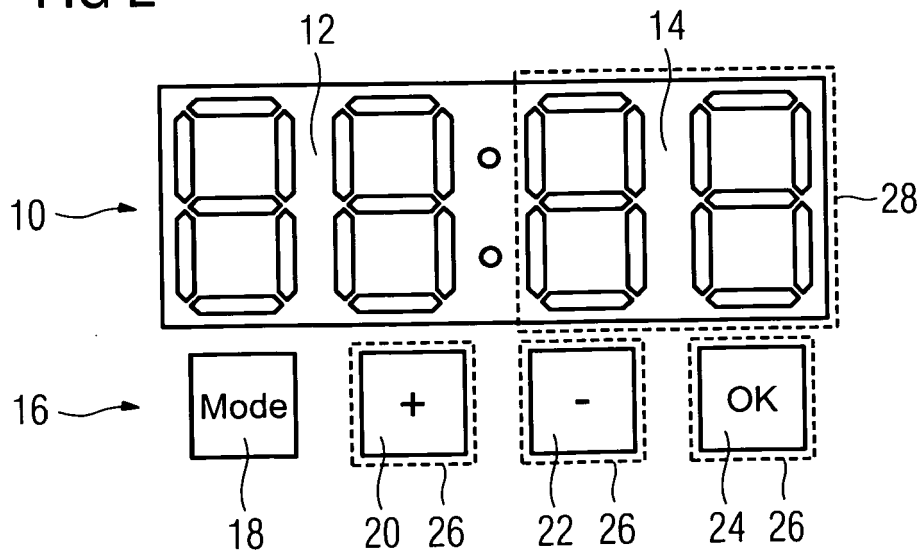
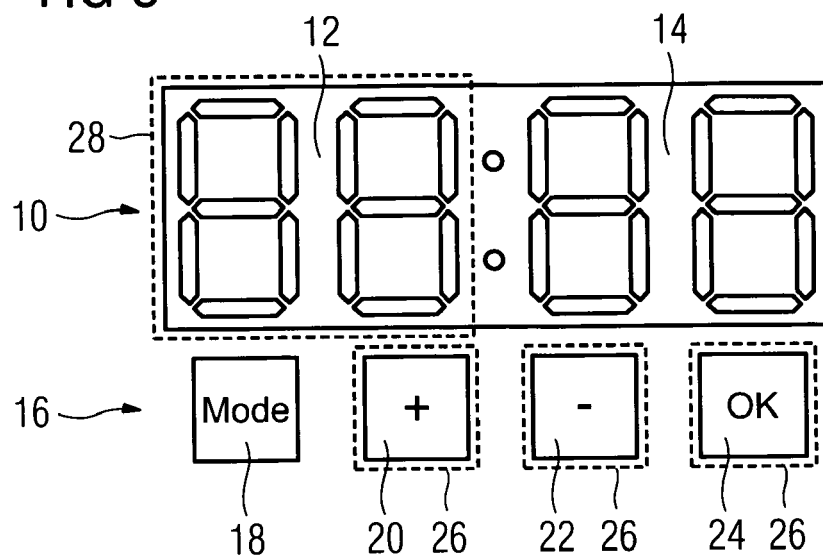


FIG 3





EUROPEAN SEARCH REPORT

Application Number
EP 09 01 5591

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 22 March 2010	Examiner Bream, Philip
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 09 01 5591

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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22-03-2010

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REFERENCES CITED IN THE DESCRIPTION

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