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

Schaltuhr für ein Haushaltsgerät

Horloge programmatrice d'appareil domestique

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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] DE 196 06 115 A1 discloses an operating panel for a domestic appliance. By an operating element, parameters like starting time for cooking, duration of cooking and end time of cooking can be modified.

[0005] 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.

[0006] This object is achieved by the clock timer for a domestic appliance according to claim 1.

[0007] 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.

[0008] 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.

[0009] 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.

[0010] 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 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.

[0011] Preferably, the predetermined holding time is between one and two seconds. For example, the predetermined holding time is one and a half seconds.

[0012] 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.

[0013] 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.

[0014] 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.

[0015] 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.

[0016] 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.

[0017] The object of the present invention is further achieved by a domestic appliance according to the claim 12.

[0018] The domestic appliance according to the present invention comprises at least one clock timer as

described above.

[0019] The invention will be explained in more detail below by means of an exemplary embodiment. Reference 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.

[0020] 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.

[0021] 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.

[0022] 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.

[0023] 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.

[0024] 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.

[0025] 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.

[0026] 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.

[0027] 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.

[0028] 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.

[0029] 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.

[0030] 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.

[0031] 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.

[0032] 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".

[0033] 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.

[0034] 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.

[0035] 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.

[0036] 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.

[0037] 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.

[0038] 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.

[0039] 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 of the invention as defined by the claims.

List of Reference Numerals

[0040]

- | | | |
|----|----------------------------------------------|----|
| 10 | display device | 5 |
| 12 | display portion for the value of the hours | 10 |
| 14 | display portion for the value of the minutes | 15 |
| 16 | key board | 20 |
| 18 | mode selection key | 25 |
| 20 | switch-up key | 30 |
| 22 | switch-down key | 35 |
| 24 | confirmation key | 40 |
| 26 | optical signal for the key | 45 |
| 28 | optical signal for the display portion | 50 |
| | | 55 |

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 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

characterized in that

- 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 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),
- 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.

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,

characterized in that

the predetermined holding time is between one and two seconds.

4. The clock timer according to claim 1 or 3,

characterized in that

the predetermined holding time is one and a half seconds.

5. 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. 10
6. The clock timer according to any one of the preceding claims,
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. 20
7. The clock timer according to any one of the preceding claims,
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). 25
8. The clock timer according to any one of the claims 2 to 7,
characterized in that
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
9. The clock timer according to any one of the preceding claims,
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". 35
10. The clock timer according to any one of the preceding claims,
characterized in that
the display device (10) comprises an additional display portion for displaying the seconds of the time period. 40
11. 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 10. 45

Patentansprüche

1. Zeitschaltuhr für ein Haushaltsgerät, wobei:

- die Zeitschaltuhr zur Einstellung eines numerischen Werts für einen Zeitraum durch den Benutzer vorgesehen ist,
- die Zeitschaltuhr eine Anzeigevorrichtung (10), eine Tastatur (16) und eine Steuereinheit umfasst,
- die Anzeigevorrichtung (10) mindestens zwei Anzeigebereiche (12, 14) umfasst,
- ein Anzeigebereich (12) einen numerischen Wert für die Stunden des Zeitraums anzeigt,
- ein weiterer Anzeigebereich (14) einen numerischen Wert für die Minuten des Zeitraums anzeigt,
- die Tastatur (16) eine Hochschalt-Taste (20) umfasst, um die angezeigten numerischen Werte für die Stunden und die Minuten zu erhöhen,
- die Tastatur (16) eine Herunterschalt-Taste (22) umfasst, um die angezeigten numerischen Werte für die Stunden und die Minuten zu verringern,
- die Tastatur (16) eine Bestätigungstaste (24) umfasst, um die angezeigten numerischen Werte für die Stunden und die Minuten zu bestätigen,

dadurch gekennzeichnet, dass

- die Tastatur (16) eine Modusauswahltaste (18) umfasst, um zwischen einem Basismodus, einem Modus zur Einstellung des numerischen Werts für die Stunden und einem weiteren Modus zur Einstellung des numerischen Werts für die Minuten umfasst,
- der Basismodus, der Modus zur Einstellung des numerischen Werts für die Stunden und der Modus zur Einstellung des numerischen Werts für die Minuten durch mindestens zwei unterschiedliche optische Signale (26, 28) in der Anzeige (10) und/oder in der Tastatur (16) erkennbar sind,
- die Steuereinheit die angezeigten numerischen Werte für die Stunden und die Minuten in einem der Einstellmodi automatisch bestätigt, wenn die Bestätigungstaste (24) innerhalb einer vorbestimmten Haltezeit nicht betätigt wurde.

2. Zeitschaltuhr nach Anspruch 1,

dadurch gekennzeichnet, dass

die Anzeigebereiche (12, 14) die numerischen Werte der Stunden und der Minuten des Zeitraums in jedem Fall durch eine zweistellige Zahl anzeigen.

3. Zeitschaltuhr nach Anspruch 1,

dadurch gekennzeichnet, dass

die vorbestimmte Haltezeit zwischen einer und zwei Sekunden beträgt.

4. Zeitschaltuhr nach Anspruch 1 oder 3,
dadurch gekennzeichnet, dass 5
die vorbestimmte Haltezeit eineinhalb Sekunden beträgt.
5. Zeitschaltuhr nach einem der vorhergehenden Ansprüche, 10
dadurch gekennzeichnet, dass
im Basismodus die Modusauswahltaste (18) auf eine Betätigung durch den Benutzer reagieren kann, während die Hochschalt-Taste (20), die Herunterschalt-Taste (22) und die Bestätigungstaste (24) im Basismodus deaktiviert sind. 15
6. Zeitschaltuhr nach einem der vorhergehenden Ansprüche, 20
dadurch gekennzeichnet, dass
in den Einstellmodi die Hochschalt-Taste (20), die Herunterschalt-Taste (22) und die Bestätigungstaste (24) auf eine Betätigung durch den Benutzer reagieren können, während die Modusauswahltaste (18) in den Einstellmodi deaktiviert ist. 25
7. Zeitschaltuhr nach einem der vorhergehenden Ansprüche, 30
dadurch gekennzeichnet, dass
die optischen Signale (26) für die Tasten durch eine Beleuchtung oder ein blinkendes Licht hinter, unter, neben und/oder um die Tasten (18, 20, 22, 24) gebildet werden. 35
8. Zeitschaltuhr nach einem der Ansprüche 2 bis 7, 40
dadurch gekennzeichnet, dass
die optischen Signale (28) für die Anzeigeabschnitte (12, 14) in jedem Fall durch ein blinkendes Licht der zweistelligen Zahlen gebildet werden. 45
9. Zeitschaltuhr nach einem der vorhergehenden Ansprüche, 50
dadurch gekennzeichnet, dass
der Modus zur Einstellung des numerischen Werts für die Stunden im Modus zur Einstellung des numerischen Werts für die Minuten durch ausreichend viele Betätigungen der Hochschalt-Taste (20) aktiviert werden kann, so dass der numerische Wert für die Minuten den Wert "60" übersteigt. 55
10. Zeitschaltuhr nach einem der vorhergehenden Ansprüche, 60
dadurch gekennzeichnet, dass
die Anzeigevorrichtung (10) einen zusätzlichen Anzeigeabschnitt zum Anzeigen der Sekunden des Zeitraums umfasst.
11. Haushaltsgerät mit mindestens einer Zeitschaltuhr,

dadurch gekennzeichnet, dass

das Haushaltsgerät mindestens eine Zeitschaltuhr nach einem der vorhergehenden Ansprüche 1 bis 10 umfasst.

Revendications

1. Horloge pour un appareil domestique, dans laquelle:

- l'horloge est prévue pour régler une valeur numérique d'une période de temps par un utilisateur,
- l'horloge comprend un dispositif d'affichage (10), un clavier (16) et une unité de commande,
- le dispositif d'affichage (10) comprend au moins deux portions d'affichage (12, 14),
- une portion d'affichage (12) affiche une valeur numérique des heures de la période de temps,
- une autre portion d'affichage (14) affiche une valeur numérique des minutes de la période de temps,
- le clavier (16) comprend une touche de commutation vers le haut (20) pour augmenter les valeurs numériques affichées des heures et des minutes, respectivement,
- le clavier (16) comprend une touche de commutation vers le bas (22) pour diminuer les valeurs numériques affichées des heures et des minutes, respectivement,
- le clavier (16) comprend une touche de confirmation (24) pour confirmer les valeurs numériques affichées des heures et des minutes, respectivement, et

caractérisée en ce que

- le clavier (16) comprend une touche de sélection de mode (18) pour sélectionner entre un mode basique, un mode de réglage de la valeur numérique des heures et un autre mode de réglage de la valeur numérique des minutes,
- le mode de base, le mode de réglage de la valeur numérique des heures et le mode de réglage de la valeur numérique des minutes sont reconnaissables par au moins deux signaux optiques différents (26, 28) dans l'affichage (10) et/ou dans le clavier (16),
- l'unité de commande confirme automatiquement les valeurs numériques affichées des heures et des minutes, respectivement, dans un des modes de réglage, si la touche de confirmation (4) n'a pas été actionnée durant une durée de maintien prédéterminée.

2. Horloge selon la revendication 1, **caractérisée en ce que** les portions d'affichage (12, 14) affichent les valeurs numériques des heures et des minutes de

la période de temps par un nombre à deux chiffres dans chaque cas.

ractérisé en ce que l'appareil domestique comprend au moins une horloge selon l'une quelconque des revendications précédentes 1 à 10.

3. Horloge selon la revendication 1, **caractérisée en ce que** la durée de maintien prédéterminée est entre une et deux secondes. 5
4. Horloge selon la revendication 1 ou 3, **caractérisée en ce que** la durée de maintien prédéterminée est d'une et demi seconde. 10
5. Horloge selon l'une quelconque des revendications précédentes, **caractérisée en ce que** dans le mode de base, la touche de sélection de mode (18) peut répondre à une opération par l'utilisateur, tandis que la touche de commutation vers le haut (20), la touche de commutation vers le bas (22) et la touche de confirmation (24) sont désactivées dans le mode de base. 15
20
6. Horloge selon l'une quelconque des revendications précédentes, **caractérisée en ce que** dans les modes de réglage, la touche de commutation vers le haut (20), la touche de commutation vers le bas (22) et la touche de confirmation (24) peuvent répondre à une opération par l'utilisateur, tandis que la touche de sélection de mode (18) est désactivée dans les modes de réglage. 25
7. Horloge selon l'une quelconque des revendications précédentes, **caractérisée en ce que** les signaux optiques (26) pour les touches sont réalisés par une illumination ou une lumière clignotante derrière, en dessous, à côté et/ou autour desdites touches (18, 20, 22, 24). 30
35
8. Horloge selon l'une quelconque des revendications 2 à 7, **caractérisée en ce que** les signaux optiques (28) pour les portions d'affichage (12, 14) sont réalisés par une lumière clignotante des nombres à deux chiffres dans chaque cas. 40
9. Horloge selon l'une quelconque des revendications précédentes, **caractérisée en ce que** le mode de réglage pour la valeur numérique des heures peut être activé dans le mode de réglage pour la valeur numérique des minutes par des opérations suffisantes de la touche de commutation vers le haut (20) de sorte que la valeur numérique des minutes dépasse la valeur "60". 45
50
10. Horloge selon l'une quelconque des revendications précédentes, **caractérisée en ce que** le dispositif d'affichage (10) comprend une portion d'affichage additionnelle pour afficher les secondes de la période de temps. 55
11. Appareil domestique avec au moins une horloge, **ca-**

FIG 1

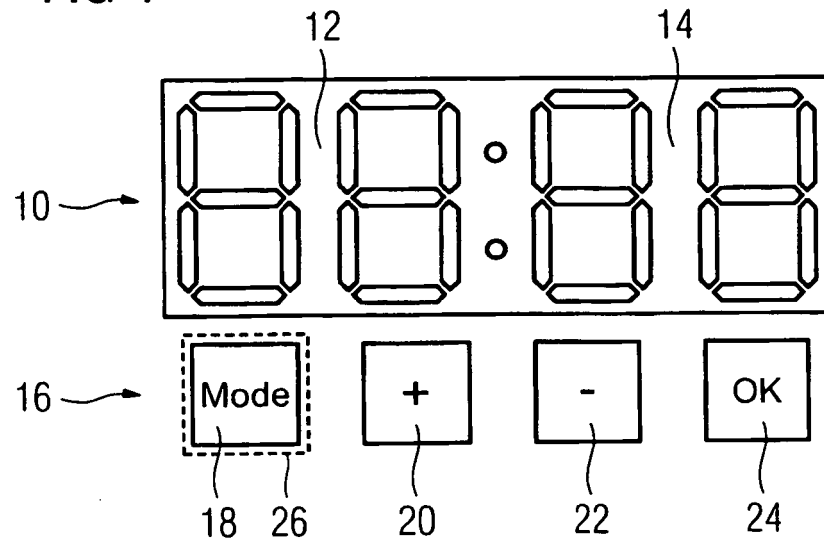


FIG 2

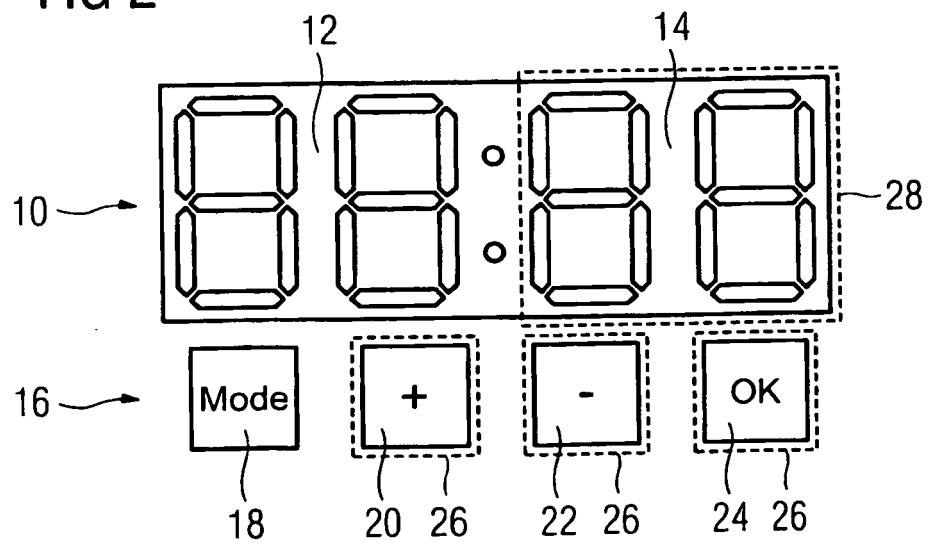
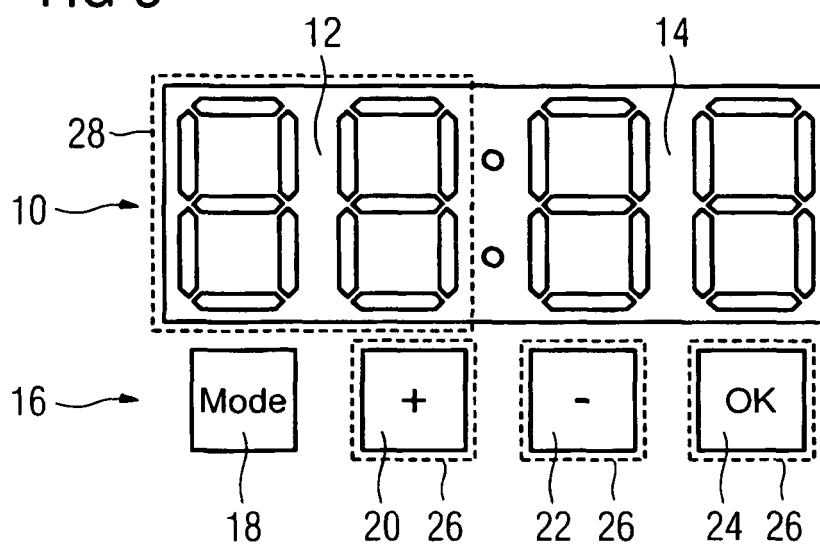


FIG 3



REFERENCES CITED IN THE DESCRIPTION

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