

(19)



(11)

EP 1 785 530 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

16.05.2007 Bulletin 2007/20

(51) Int Cl.:

E03C 1/05 (2006.01)

(21) Application number: **05110687.0**

(22) Date of filing: **14.11.2005**

(84) Designated Contracting States:

**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI
SK TR**

Designated Extension States:

AL BA HR MK YU

(71) Applicant: **Check Up s.r.l.**

31013 Codogno' (Treviso) (IT)

(72) Inventor: **Carlet, Michele**

31020 Tarzo TV (IT)

(74) Representative: **Modiano, Micaela Nadia et al**

Dr. Modiano & Associati SpA

Via Meravigli 16

20123 Milano (IT)

(30) Priority: **14.11.2005 IT TV20040134**

(54) **Interface device particularly for shower cubicles or whirlpool baths**

(57) An interface device, particularly for shower cubicles (2) or whirlpool baths comprising a unit (3) for controlling and setting their operating cycle. The device comprises at least one sensor (6) for detecting a preset po-

sition of the user and at least one first button (10) and one second button (11), which can be activated by the at least one sensor (6). The at least one first and second buttons (10, 11) can be operated selectively by the user for the remote programming of the unit.

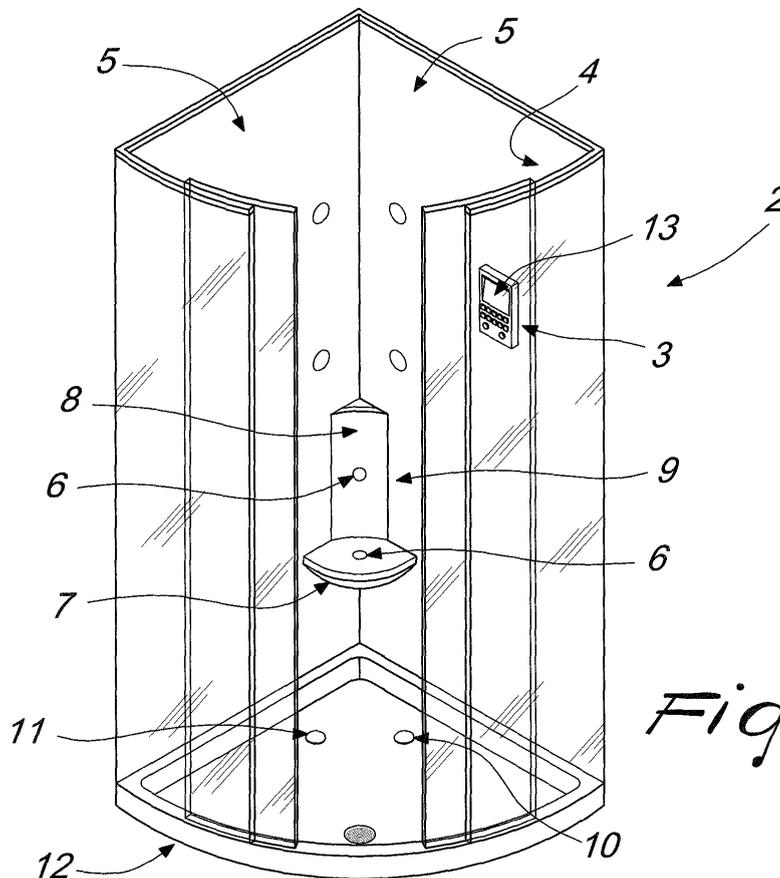


Fig. 1

EP 1 785 530 A1

Description

[0001] The present invention relates to an interface device particularly for shower cubicles or whirlpool baths.

[0002] In recent years there has been a considerable increase in the trend to provide shower cubicles and whirlpool baths, mainly for home use, which have several functions intended to facilitate personal hygiene care activities and integrate them with new services capable of providing an intense feeling of well-being and relaxation to the user, such as for example hydromassage and sauna functions.

[0003] The increase in the number of these functions has required the integration, within these known types of shower cubicle and whirlpool bath, of hydraulic systems which have an ever-increasing degree of complexity and are designed to achieve a broad range of ways for feeding water or steam into said cubicle or bath and for adjusting their temperature.

[0004] Moreover, such known types of shower cubicle and bath comprise sensors for detecting chosen operating parameters thereof and valves which can be activated automatically to prevent their damage or the overflow of the water also as a consequence of improper use on the part of the user.

[0005] In view of the complexity reached by these known types of shower cubicle and bath, users feel particularly the need to control and activate the many functions offered by said shower cubicles and baths in a manner which is simple and intuitive and from the inside thereof during their use.

[0006] Currently, it is known to place within the shower cubicle or on the rim of the whirlpool bath a known type of unit for controlling and setting the operating cycle thereof.

[0007] In the case of the shower cubicle, such unit is located at the internal face of one of the side walls that constitute the enclosure of the cubicle, at such a height as to allow easy access thereto by the user when the user is standing; such unit comprises a screen, which displays for example the available functions, the active ones, and a chosen number of operating parameters of the shower cubicle, and a keypad for setting the operating cycle of the shower cubicle.

[0008] In the case of the whirlpool bath, said unit is located on the lateral upper rim of the bath or at one end of the bath and is arranged so that the screen faces upward or toward the inside of the bath, depending on its constructive shape, so that it can be viewed easily by the user.

[0009] The main drawback that can be observed in the use of these known types of unit for controlling and setting the operating cycle of shower cubicles and whirlpool baths consists in that they can be programmed only by means of a keypad which is integrated in them or, in the case of the bath, located on the upper rim thereof.

[0010] This entails the fact that the user is forced to reach the point where said unit is located, for example

by standing up if he is sitting on the seat located inside the shower cubicle or by moving within the bath up to the location of the keypad.

[0011] As a partial solution to this drawback, it is known to provide remote controls, for example of the infrared or radio type, by means of which it is possible to remotely program the unit for controlling and setting the operating cycle of shower cubicles and of whirlpool baths.

[0012] However, even this known solution has drawbacks, the foremost one being the need for the user to keep the remote control constantly within reach, such remote control being thus exposed to damage and falls.

[0013] Another drawback of this known solution is that the operation of the remote control always depends on the level of charge of the batteries that power it, which must therefore be monitored by the user and can cause sudden interruptions in the operation of said remote control.

[0014] The aim of the present invention is to solve the above-mentioned problems, eliminating the drawbacks of the cited background art, by providing an interface device which allows convenient and easy programming, by the user, of the operating cycle of a shower cubicle or whirlpool bath.

[0015] Within this aim, an object of the invention is to provide an interface device which allows to offer high safety and stability in use.

[0016] Another object is to provide an interface device which is structurally simple and has low manufacturing costs.

[0017] This aim and these and other objects, which will become better apparent hereinafter, are achieved by an interface device, particularly for shower cubicles or whirlpool baths comprising a unit for controlling and setting their operating cycle, characterized in that it is constituted by at least one sensor for detecting a preset position of the user and at least one first button and one second button, which can be activated by said at least one sensor, said at least one first and second buttons being activatable selectively by said user for the remote programming of said unit.

[0018] Further characteristics and advantages of the invention will become better apparent from the following detailed description of a particular but not exclusive embodiment, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a perspective view of a shower cubicle which comprises an interface device according to the invention;

Figure 2 is a top view of a whirlpool bath comprising an interface device according to the invention;

Figure 3 is a block diagram of a possible embodiment of a circuit for controlling and programming a shower cubicle or a whirlpool bath comprising an interface device according to the invention.

[0019] In the exemplary embodiments that follow, in-

dividual characteristics, given in relation to specific examples, may actually be interchanged with other different characteristics that exist in other examples of embodiment.

[0020] Moreover, it is noted that anything found to be already known during the patenting process is understood not to be claimed and to be the subject of a disclaimer.

[0021] With reference to Figure 1, an interface device is shown which is associated with a shower cubicle, designated by the reference numeral 2, of the type which comprises a unit 3 for controlling and setting the operating cycle thereof.

[0022] The unit 3 is generally located on the internal face 4 of a wall 5 of the shower cubicle 2, at a height which can be reached easily by a user who is standing inside the shower cubicle, and comprises a keypad for its activation.

[0023] The interface device according to the present invention is constituted by at least one sensor 6, which is capable of detecting the presence of the body of the user proximate to the sensor.

[0024] The sensor 6 can be constituted for example by a switch of the mechanical or piezoelectric type, which therefore can be activated by direct contact with the body of the user, or by a proximity switch, therefore for example of the inductive, ultrasound, capacitive, infrared or photocell-based type, which is therefore capable of detecting the proximity of the body of the user without requiring direct contact therewith.

[0025] The at least one sensor 6 can be arranged advantageously at one or more points of the shower cubicle or bath which are spaced from the keypad of the unit 3 for controlling and setting them, so as to detect the presence of the user when the user is in a position from which he cannot access easily the keypad.

[0026] If the interface device is applied to a shower cubicle, the at least one sensor 6 can be for example arranged at the sitting surface 7 or back 8 of a seat 9 located inside the cubicle, so as to detect the presence of the user when he is sitting on the seat 9.

[0027] Further, the sensor 6 has a protection against water infiltrations at least equal for example to IP66 or higher according to the IEC 529 standard if it is installed inside a shower cubicle, so as to ensure high operating safety even during operating cycles which entail pouring a considerable flow-rate of water onto it.

[0028] The interface device further comprises at least one first button 10 and at least one second button 11, both of which are of the single-state type and are connected electrically to the unit 3 for controlling and setting the operating cycle thereof.

[0029] The first and second buttons are normally deactivated and located in points that can be accessed easily by the user when said user is in the position in which his presence is detected by said at least one sensor 6.

[0030] If the sensor 6 is located in a point of the seat 9 of a shower cubicle 2, the first and second buttons can

be arranged advantageously on the shower tray 12, in two positions which can be reached easily by the feet of the user who is sitting on said seat.

[0031] Moreover, the first and second buttons must have a high protection against water infiltrations, for example at least equal to IP66 or higher according to the IEC 529 standard if they are installed within a shower cubicle, so as to ensure high operating safety even during operating cycles which entail pouring a considerable flow-rate of water onto such buttons.

[0032] Further, when the sensor 6 detects the presence of the user in the chosen position, it activates the first and second buttons 10 and 11, which in turn allow the user to program remotely the unit 3 without having to move from the position he is occupying.

[0033] In the case of the shower cubicle, programming can therefore occur without the user being forced to leave the seat 9.

[0034] Advantageously, the first button 10 allows the movement of a cursor displayed on a screen 13 which is part of the unit 3, while the second button 11 allows to select the function that is highlighted at that moment by the cursor and can be performed by the shower cubicle 2 and is constituted for example by a shower, hydromassage or sauna cycle.

[0035] For example, it is possible to associate with the pressure of the first button 10 the generation of a series of sound tones which are diversified depending on the selected function, so as to allow their quick recognition even without requiring the user to check their match on the screen.

[0036] The pressing of the second button 11 can be matched by the generation of an additional sound tone, which is different from the preceding ones, for confirming that the selected function has been set; the generation of these acoustic signals can be very effective particularly if the user has sight problems.

[0037] Figure 3 illustrates, by means of block diagram, a possible embodiment of a circuit for controlling and programming a shower cubicle or a whirlpool bath in which the interface device according to the invention has been installed.

[0038] The first button 10 and the second button 11 are connected electrically to an electronic control unit 14, which is provided for example within the unit 3 for controlling and setting the operating cycle; the screen 13 and optionally a keypad 15 are further connected to the control unit 14.

[0039] The electronic control unit 14 is designed to process the data entered by means of the keypad 15 or by means of the first and second buttons 10 and 11, to display on the screen 13 the operating status, and to transmit said data to an electronic actuation board 16, which is intended to actuate the elements that constitute the water system of the shower cubicle and to manage the display, on the screen 13, of the chosen parameters related to the operation of said elements.

[0040] As an alternative, the first and second buttons

10 and 11 can be connected directly to the electronic actuation board 16; in this case, the commands given by means of the first and second buttons are transmitted to the electronic control unit 14 by said electronic actuation board 16, preferably in serial form.

[0041] Moreover, the electronic control unit 14 is connected electrically to a plurality of sensors located in chosen points of the shower cubicle or whirlpool bath, such as for example sensors for detecting infrared rays emitted by an optional remote control, temperature sensors and/or vibration sensors.

[0042] The electronic actuation board 16 may comprise a control processor 17 for a plurality of actuators 18 and the optional management of the signals that arrived from the buttons 10 and 11, if they are connected electrically thereto, and a plurality of additional boards 19 constituted for example by sound playback units, input/output devices, and interfacing systems.

[0043] Preferably, the first button 10 and the second button 11 are connected to a LED or a lamp, which are arranged at said buttons or integrated inside them; the buttons are lit and optionally flash when they are activated by the sensor 6 in order to facilitate their identification by the user.

[0044] When the shower cubicle is in the standby condition, the sensor can also advantageously be lit and can optionally act as a power-on button; once the shower cubicle has been activated, the lighting of the sensor can be switched off automatically.

[0045] Figure 2 illustrates a whirlpool bath 120, in which an interface device according to the invention is installed; the bath 120 is of the type provided with a unit 103 for controlling and setting its operating cycle, which is arranged by way of example at a first end 121 of said bath.

[0046] In this case, the sensor 106 can be located advantageously at a region or cushion 122 located at a second end 123, which lies opposite the first end 121, of said bath 120, and is capable therefore of detecting the presence of the user when said user is lying with his back arranged proximate to the end 123 or with his head rested on the cushion 122.

[0047] In this case, the first and second buttons 110 and 111 can be arranged respectively on the opposite side walls of the bath, at a height which can be reached easily by the hands of the user when the user is lying inside the bath with his back arranged proximate to the end 123 or with his head rested against the cushion 122.

[0048] Contoured portions, located at the arms of the user, for supporting the arms during the use of the buttons 110 and 111 and thus prevent them from getting tired, can be arranged conveniently on the side walls of the bath.

[0049] The sensor 106 and the first and second buttons 110 and 111 have a high level of protection against water infiltrations, for example equal at least to IP67 or higher, according to the IEC529 standard if they are installed in a whirlpool bath, so as to ensure high operating safety

even if operating cycles which provide for their complete immersion for long periods are performed.

[0050] The at least one sensor 106 and the first and second buttons 110 and 111 can be lit, according to a logic system which is similar to the one described with reference to installation within a shower cubicle, also in the case in which the interface device is installed in a whirlpool bath.

[0051] The operation of the interface device according to the invention entails that when the user of the shower cubicle or whirlpool bath is in a position in which his presence cannot be detected by the at least one sensor, the first and second buttons are deactivated and therefore any pressure thereof, even an accidental one, is ignored by the electronic control unit, the programming of said unit being possible, in such conditions, only by means of an auxiliary keypad of the known type.

[0052] When the user is instead in a position in which his presence is detected by the at least one sensor, which corresponds advantageously to a position in which said user cannot access easily the keypad of the unit for controlling and setting the shower cubicle or bath, the first and second buttons are activated automatically.

[0053] Therefore, the user, by acting on the first and second buttons, can position the virtual cursor displayed on the screen of the unit for controlling and setting the shower cubicle or bath and select the functions thereof that he wishes to activate, being assisted also by the emission of a sound tone which is differentiated depending on the selected function.

[0054] It has thus been found that the invention has achieved the intended aim and objects, an interface device having been devised which allows convenient and easy programming on the part of the user of the working cycle of a shower cubicle or of a whirlpool bath.

[0055] Another object achieved by the invention is to offer high safety and stability in use.

[0056] The materials used, as well as the dimensions which constitute the individual components of the invention, may of course be more pertinent depending on the specific requirements.

[0057] The various means for performing certain different functions need not certainly coexist only in the illustrated embodiment but can be present per se in many embodiments, including ones that are not illustrated.

[0058] The characteristics indicated as being advantageous, convenient or the like may also be omitted or be replaced with equivalents.

[0059] The disclosures in Italian Patent Application No. TV2004A000134 from which this application claims priority are incorporated herein by reference.

[0060] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. An interface device, particularly for shower cubicles or whirlpool baths comprising a unit for controlling and setting their operating cycle, **characterized in that** it is constituted by at least one sensor for detecting a preset position of the user and at least one first button and one second button, which can be activated by said at least one sensor, said at least one first and second buttons being activatable selectively by said user for the remote programming of said unit. 5
2. The interface device according to claim 1, **characterized in that** said at least one sensor is constituted by a switch of the mechanical or ultrasound type, which can be activated by direct contact with the body of the user. 10
3. The interface device according to claim 1, **characterized in that** said at least one sensor is constituted by a switch of the proximity type, of the inductive, capacitive, infrared or photocell-based type. 15
4. The interface device according to claims 1, 2 and 3, **characterized in that** said first and second buttons, which are normally deactivated, are of the single-state type and are connected electrically to said unit for controlling and setting the operating cycle of said shower cubicle or whirlpool bath. 20
5. The interface device according to claims 1, 2, 3 and 4, **characterized in that** said at least one first and second buttons are connected electrically to an electronic control unit for managing the functions of said shower cubicle or whirlpool bath, said unit being integrated or connected electrically to said unit for controlling and setting the operating cycle. 25
6. The interface device according to claims 1, 2, 3 and 4, **characterized in that** said at least one first and second buttons are connected electrically directly to an electronic board, which is connected to said electronic control unit, for actuating the functions of said shower cubicle or whirlpool bath. 30
7. The interface device according to one or more of the preceding claims, **characterized in that** said at least one first and second buttons are located in points which can be accessed easily by the user when said user is in the position in which his presence is detected by said at least one sensor. 35
8. The interface device according to claims 1 and 7, **characterized in that** said at least one sensor is arranged at the sitting surface and/or back of a seat located within said shower cubicle, in order to detect the presence of the user when said user is sitting on said seat, said at least one first and second buttons being placed on the shower tray, in two chosen positions which can be reached easily by the feet of the user who is sitting on said seat. 40
9. The interface device according to claims 1 and 8, **characterized in that** said at least one sensor and said first and second buttons have a protection against water infiltrations equal at least to IP66 or higher according to the IEC 529 standard. 45
10. The interface device according to claims 1 and 7, **characterized in that** said at least one sensor is arranged at a region or cushion located at one end of said bath, in order to detect the presence of the user when said user is lying with his head rested thereon, said at least one first and second buttons being arranged respectively on the opposite side walls of said bath, at a height which can be reached easily by the hands of the user when said user is lying inside said bath with his head rested on said cushion. 50
11. The interface device according to claims 1 and 10, **characterized in that** said at least one sensor and said first and second buttons have a protection against water infiltrations that is equal at least to IP67 or higher according to the IEC 529 standard. 55
12. The interface device according to one or more of the preceding claims, **characterized in that** said first button allows the movement of a cursor which is displayed on a screen which is part of said unit, while said second button allows to select the function of said shower cubicle or whirlpool bath that is highlighted at that moment by said cursor.
13. The interface device according to claims 1 and 12, **characterized in that** the pressing of said first button is associated with the generation of a series of sound tones which are diversified according to the selected function, the pressing of said second button being matched by the generation of an additional sound tone, which differs from the preceding ones, in order to confirm that the selected function has been set.
14. The interface device according to claims 1 and 13, **characterized in that** said first and second buttons are connected to a LED or to a lamp, which are arranged thereat or integrated therein, said first and second buttons being lit and optionally flashing when activated by said at least one sensor, in order to facilitate their identification by the user.
15. The interface device according to claims 1 and 14, **characterized in that** when said shower cubicle or said whirlpool bath is in the standby condition, said

at least one sensor is lit and optionally acts as a power-on button, the lighting of said at least one sensor being deactivatable automatically once said shower cubicle or whirlpool bath has been activated.

5

10

15

20

25

30

35

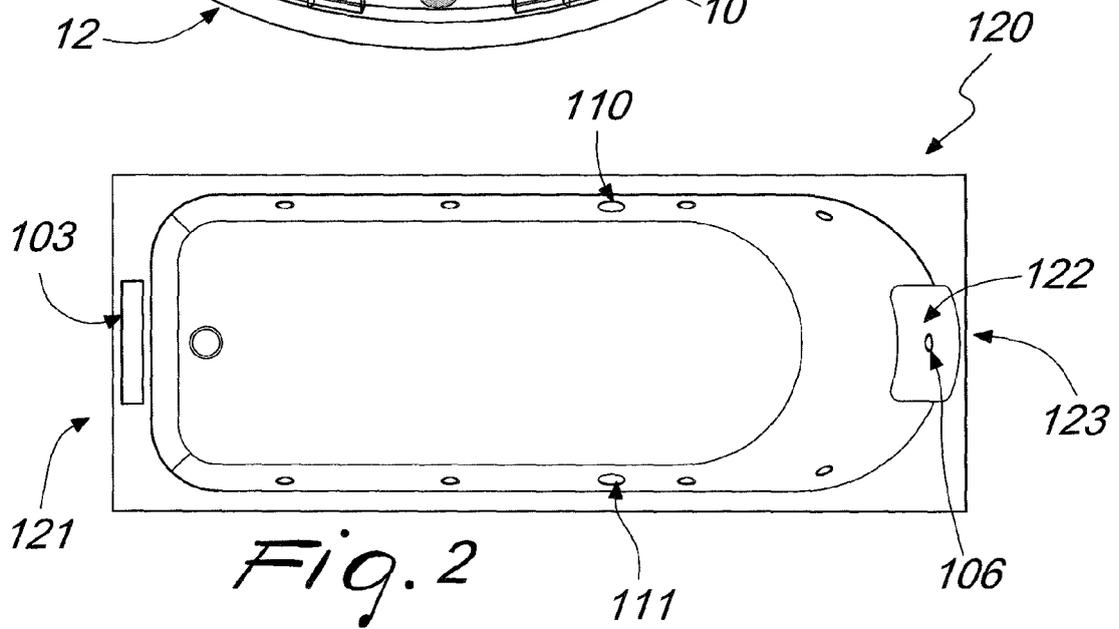
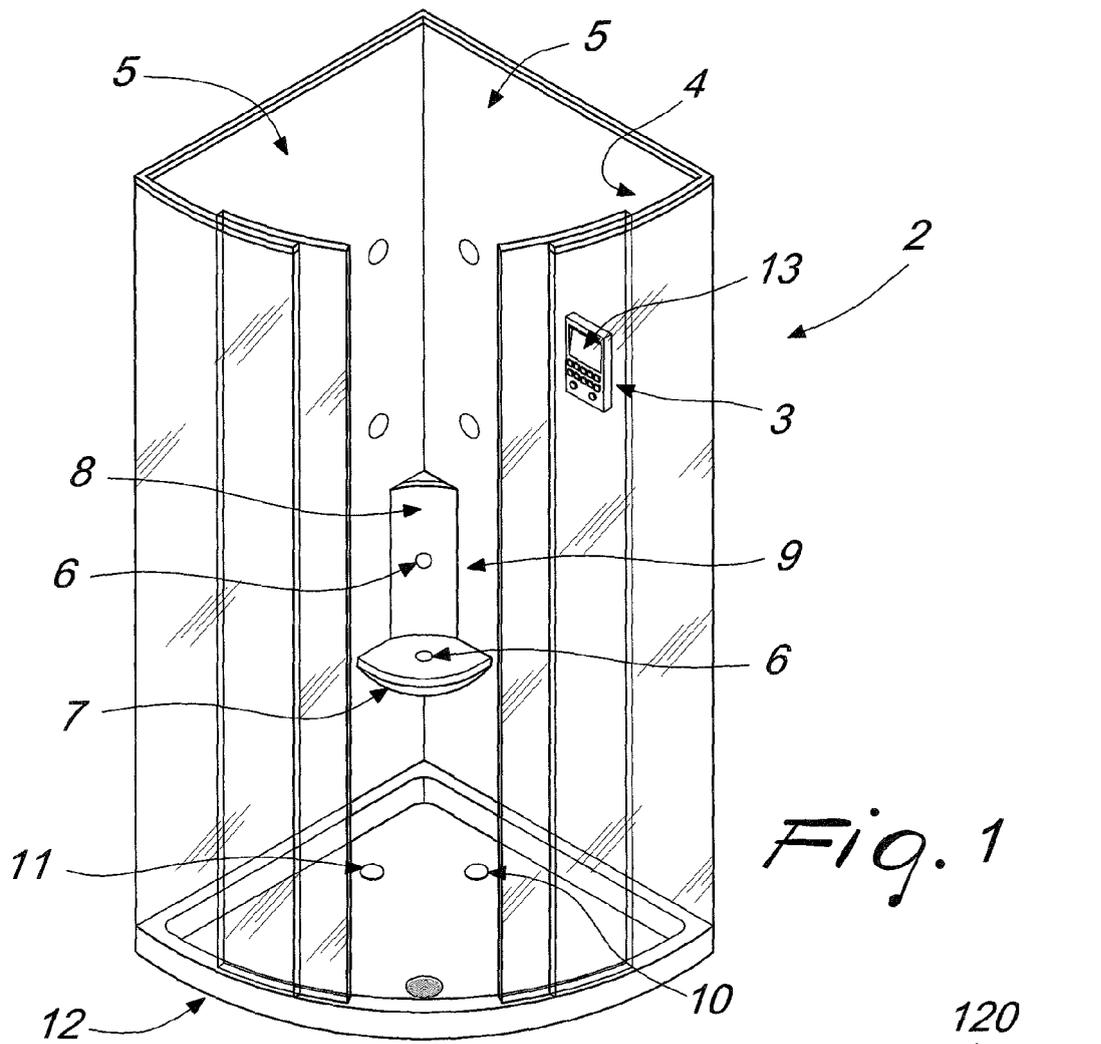
40

45

50

55

6



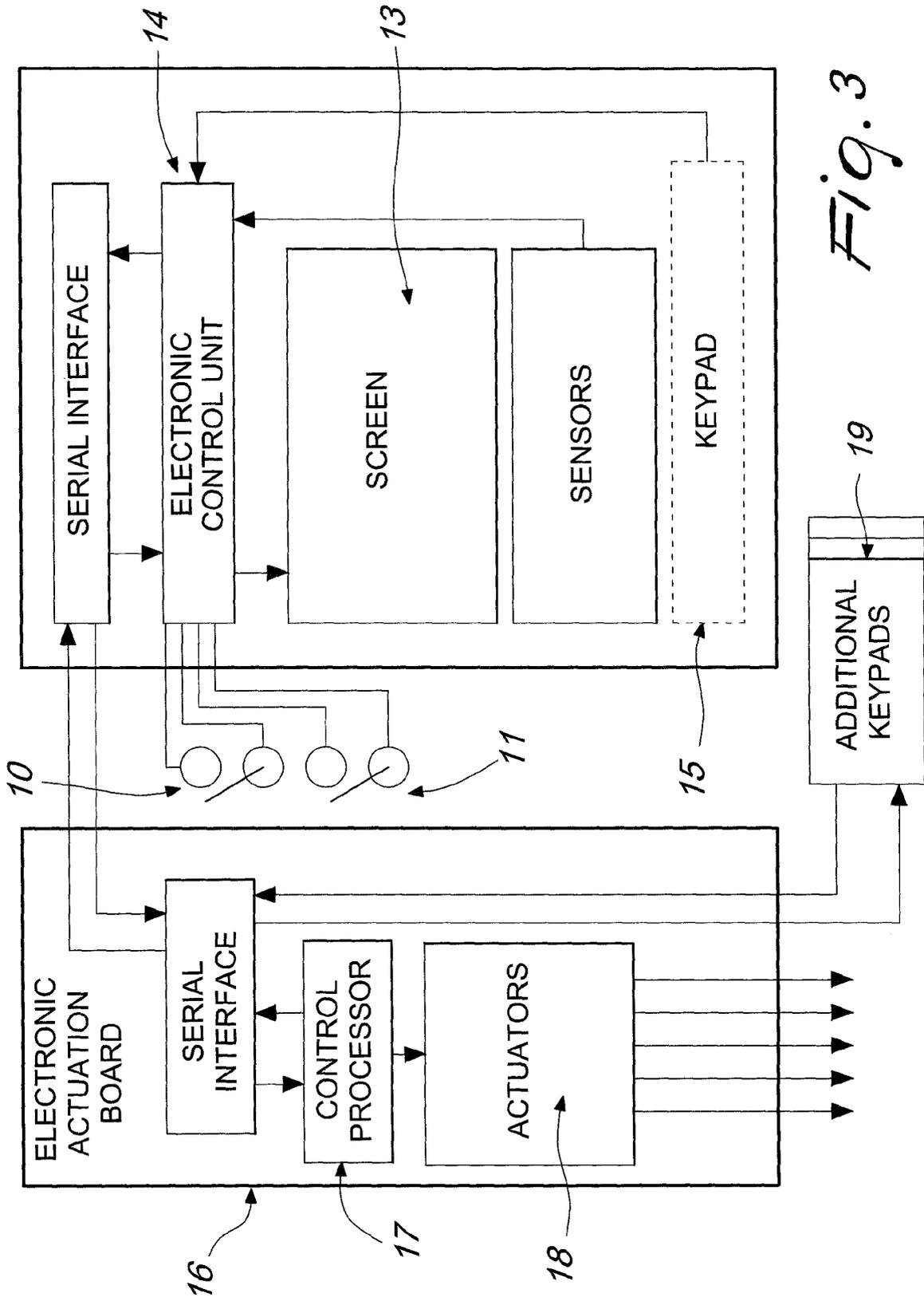


Fig. 3



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	DE 199 62 742 A1 (ARTWEGER GMBH & CO [AT]) 28 June 2001 (2001-06-28) * column 3, line 8 - line 13; figure 1 * -----	1-7,9,14	INV. E03C1/05
A	US 6 317 717 B1 (LINDSEY KENNETH R [US] ET AL) 13 November 2001 (2001-11-13) * figures 1-4,6 * -----	1-7	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			E03C
Place of search		Date of completion of the search	Examiner
Munich		2 February 2007	Flygare, Esa
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p>			

1

EPO FORM 1503 03.82 (P04C01)

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

EP 05 11 0687

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

02-02-2007

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 19962742	A1	28-06-2001	NONE	

US 6317717	B1	13-11-2001	NONE	

EPO FORM P0689

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- IT TV20040134 A [0059]