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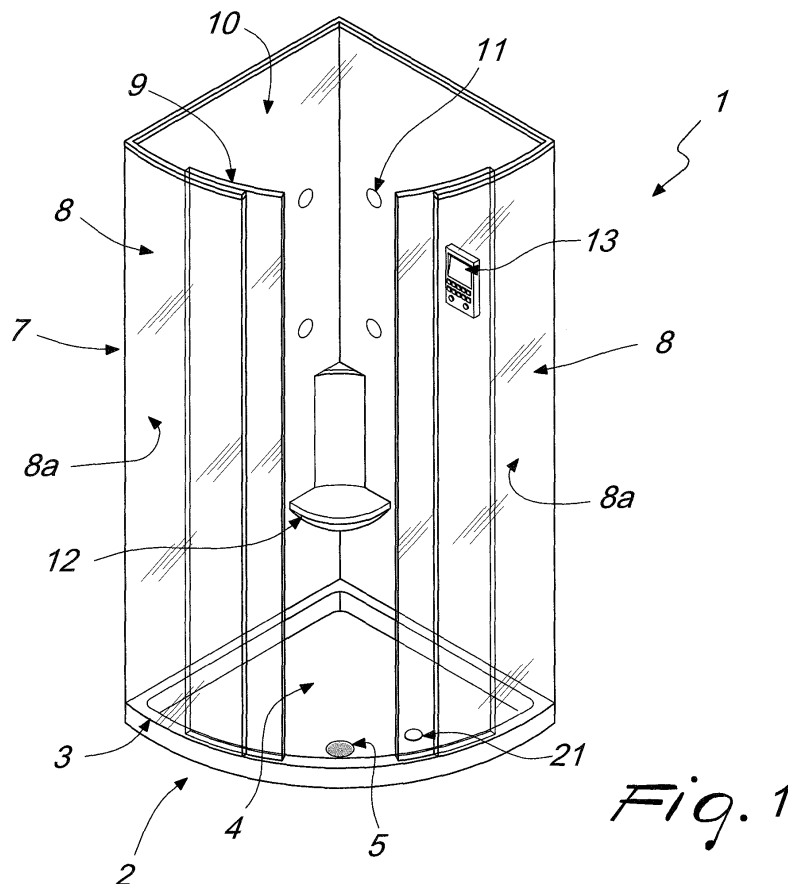
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**(54) Shower Cubicle**

(57) A shower cubicle (1), comprising a shower tray (2), a compartment (7) which can be opened for user access, and internally at least one keypad unit (13) for controlling and setting the operating cycle of the shower cubicle. The keypad unit (13) comprises a keypad (15),

which is normally deactivated even when the shower cubicle is operating, is controlled by at least one device (21), which can be operated selectively by the user, for activating temporarily the keypad and simultaneously suspending the operating cycle of the shower cubicle.



*Fig. 1*

## Description

**[0001]** The present invention relates to shower cubicle.

**[0002]** In recent years there has been a considerable increase in the trend to provide shower cubicles, 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, of hydraulic systems which have an ever-increasing degree of complexity and are aimed at achieving a broad range of ways for feeding water or steam into said cubicle and for adjusting their temperature.

**[0004]** Moreover, such known types of shower cubicle comprise sensors for detecting chosen operating parameters thereof and valves which can be activated automatically also to prevent damage to the shower cubicle or the overflow of the water as a consequence of improper use on the part of the user. In view of the complexity reached by these known types of system, users feel particularly the need to control and activate the many functions offered by said shower cubicles in a manner which is simple and intuitive, from the inside of said cubicle, during its use.

**[0005]** Currently, it is known to place within the shower cubicle a known type of keypad unit for controlling and setting the operating cycle of the cubicle, located at the inside face of one of the side walls that constitute the outside enclosure of the cubicle, at such a height as to allow easy access thereto by the user.

**[0006]** Such unit is constituted by a screen which displays for example the available functions, the active ones and a chosen number of operating parameters of the shower cubicle.

**[0007]** The operating cycle of the shower cubicle is set by means of the keypad, of a known type, by way of which it is possible to access the various functions of the cubicle and select the chosen values for parameters such as for example the type of cycle to be provided, its duration, the temperature of the water or of the shower cubicle in its various steps, the lighting of the light sources and the activation of the hydromassage functions.

**[0008]** It is known to use known types of mechanical or membrane keypad in shower cubicles; it is also known to use, because of their easier use, touch screens based on capacitive, resistive or infrared technology, or capacitive and/or optical keypads located behind a sheet of dielectric material constituted for example by glass or clear plastic material.

**[0009]** The main drawback of these known types of keypad is that their operation can exhibit irregularities in humid environments or if they are covered by a substantial film of water, conditions which in practice occur during the normal use of a shower cubicle or when the cubicle is cleaned.

**[0010]** Irregular operation of this known type of keypad can make it difficult or even impossible to set the operating cycle of the shower cubicle.

**[0011]** This difficulty in setting the operating cycle of the shower cubicle may lead to the unwanted activation of functions which are potentially dangerous for the user, such as for example the incorrect feeding of steam or water at an excessively high or low temperature into the cubicle; moreover, a malfunction of the keypad can activate unwanted controls, which can cause the overflow of water from the shower tray, with the consequent possibility of flooding the building in which the shower cubicle is installed.

**[0012]** Particular cases in which these drawbacks are particularly felt occur if a Turkish-bath cycle is set, since the high humidity of the air required by this treatment can lead to the condensation of a substantial film of water on the keypad, which can cause its irregular operation, or when a jet of water from the shower head or hydromassage jet is directed onto the keypad during the normal use of the shower cubicle; these malfunctions occur particularly often when the keypad is provided by means of a capacitive or infrared technology.

**[0013]** Further, if sprays of washing water affect the keypad during operations for cleaning the shower cubicle, the shower cubicle might be activated unintentionally.

**[0014]** The aim of the present invention is to solve the above-mentioned problems, eliminating the drawbacks of the cited background art, by providing a shower cubicle which allows the activation and deactivation of a broad range of programs for personal hygiene and/or relaxing or therapeutic treatments in the shower cubicle, making it easy and safe to program on the part of the user.

**[0015]** Within this aim, an object of the invention is to provide a shower cubicle which allows to offer high safety and stability of use of the various functions provided in a shower cubicle.

**[0016]** Another object is to provide a shower cubicle which can be cleaned easily without thereby causing incorrect operation of the functions available in the shower cubicle.

**[0017]** Another object is to provide a shower cubicle which prevents any malfunctions due to the particular environment that occurs in a shower cubicle during its use or cleaning.

**[0018]** Another object is to provide a shower cubicle which is structurally simple and has low manufacturing costs.

**[0019]** This aim and these and others objects, which will become better apparent hereinafter, are achieved by a shower cubicle, comprising a shower tray, a compartment which can be opened for user access, and internally at least one keypad unit for controlling and setting the operating cycle of said shower cubicle, characterized in that said keypad unit comprises a keypad, which is normally deactivated even when said shower cubicle is operating, is controlled by a device, which can be operated

selectively by the user, for activating temporarily said keypad and simultaneously suspending said operating cycle of said shower cubicle.

**[0020]** Further characteristics and advantages of the invention will become better apparent from the following detailed description of a particular but not exclusive embodiment thereof, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a perspective view of a shower cubicle according to the invention;

Figure 2 is a top view of a detail of the invention;

Figure 3 is a block diagram of a possible embodiment of a circuit for controlling and programming a shower cubicle according to the invention.

**[0021]** In the examples of embodiment that follow, individual characteristics, given in relation to specific examples, may actually be interchanged with other different characteristics that exist in other examples of embodiment.

**[0022]** 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.

**[0023]** With reference to the figures, the reference numeral 1 designates a shower cubicle according to the invention, which is constituted by a shower tray 2, which has a chosen plan configuration, such as for example a square or rectangular one with a rounded corner and with a raised perimetric rim 3.

**[0024]** A first hole 5 for the outflow of water is provided in a bottom 4 of the shower tray 2 and can be connected to the water system of the building in which the shower cubicle 1 is installed.

**[0025]** The shower cubicle 1 further comprises an openable compartment 7, which is constituted by a plurality of walls 8, which are arranged vertically and preferably made of clear plastic material or glass; the compartment 7 can be opened in at least one of its regions by means of one or more doors 9, preferably of the sliding type.

**[0026]** The walls 8 are arranged perimetrically with respect to the shower tray and their plan shape matches the perimetric shape of said tray, so that the compartment 7 and the shower tray 2 form an approximately prism-shaped volume 10, inside which it is possible to accommodate the user of the shower cubicle.

**[0027]** One or more nozzles 11 for feeding water or steam by way of a water system not shown in the figures are arranged in appropriate points of the compartment 7 and are directed toward the inside of the volume 10, so as to allow optimum dispersion of the fluid introduced in said volume and therefore on the body of the user.

**[0028]** Optionally, it is further possible to provide within the volume 10 a seat 12, which is supported by an internal face 8a of one or more walls 8.

**[0029]** Moreover, the shower cubicle 1 comprises at

least one keypad unit 13, for controlling and setting its operating cycle, which is located on the internal face 8a of a wall 8 and is arranged in a position which can be reached easily by the user when he is standing on the shower tray 2, preferably at eye level, so that it can be viewed easily by the user.

**[0030]** The unit 13 is constituted by a screen 14, for example a display, on which it is possible to show, for example, the available functions of the shower cubicle 1, any active functions and a chosen number of operating parameters of the shower cubicle 1, such as the temperature of the water or steam, the duration of the operating cycle in progress, or any alarms.

**[0031]** The unit 13 further comprises a keypad 15, which is constituted for example by a touch screen, which is optionally superimposed on the display and operates with capacitive, resistive or infrared technology; as an alternative, said keypad can be constituted by a capacitive and/or optical button pad in front of which a sheet of dielectric material, constituted for example by glass or clear plastic material, is arranged.

**[0032]** The keypad 15 is normally deactivated even when the shower cubicle is operating.

**[0033]** The unit 13 for controlling and setting the operating cycle of the shower cubicle 1 further comprises an electronic control unit 16, which is connected electrically to the screen 14 and to the keypad 15 and is intended to process the data entered by means of the keypad 15, transmit such data to an electrical actuation board 17 designed to control the elements that constitute the hydraulic system of the shower cubicle 1 and manage the display, on the screen 14, of the chosen parameters related to the operation of the shower cubicle 1.

**[0034]** Moreover, the electronic control unit 16 is connected electrically to a plurality of sensors located in chosen points of the shower cubicle 1, such as for example sensors for detecting infrared rays emitted by an optional remote control, temperature sensors and/or vibration sensors.

**[0035]** The electronic actuation board 17 can comprise a control processor 18 for a plurality of actuators 19 and a plurality of additional cards 20 constituted for example by audio playback devices, input/output devices, and interfacing systems.

**[0036]** The shower cubicle 1 further comprises a device for temporarily activating the keypad 15 and simultaneously suspending the operating cycle of the shower cubicle 1, which is constituted by a switch 21 of the single-state type.

**[0037]** Such device can be arranged advantageously in a chosen point of the shower tray; for example, the switch 21 can be arranged within an appropriately provided through seat 22 formed on the bottom 4 of the shower tray 2, which is arranged preferably so that its axis is vertical, thus allowing to arrange inside it a terminal of one or more electrical cables arranged below the bottom 4.

**[0038]** The seat 22 can be arranged, in an advanta-

geous but not exclusive embodiment, preferably proximate to the perimetric rim 3 of the shower tray 2, in a position which can be reached easily, intentionally and not inadvertently, by the foot of a user who is standing on the shower tray.

**[0039]** The switch 21 can be for example of the mechanical type or of another type, so as to ensure its operation and the intentionality of the activation of the keypad 15 by the user.

**[0040]** The switch 21 is connected electrically to the electronic control unit 16; according to an alternative embodiment, the switch 21 can be connected electrically directly to the electric actuation board 17.

**[0041]** When the switch 21 is pressed by the foot of the user, it causes the temporary activation of the keypad 15 and the simultaneous suspension of the operating cycle of the shower tray; since such switch is of the single-state type, when it is released by the user the keypad 15 is deactivated automatically, while the operating cycle resumes from the point where it was interrupted, optionally taking into account the new parameters entered by means of said keypad.

**[0042]** Optionally, the keypad 15 can have a different coloring depending on whether it is activated or deactivated, so as to provide an immediate visual cue regarding its status to the user; by way of example, said keypad can have a red lighting when it is deactivated and a green lighting when it is instead activated.

**[0043]** Conveniently, the switch 21 has a high degree of protection against water infiltrations, for example equal at least to IP 66 or higher, according to the IEC 529 standard, so as to ensure high operating safety even during operating cycles which entail the flow of a large amount of water onto the shower tray 2.

**[0044]** Preferably, the switch 21 is connected to a LED or to a lamp, which also can be accommodated within the seat 22 or integrated in the single-state switch 21, which are lit when the switch 21 is not pressed, in order to facilitate the identification of said switch by the user.

**[0045]** When the shower cubicle 1 is in the standby condition, the switch 21 may further be advantageously lit and act as a power-on switch, optionally activating simultaneously a lamp for better viewing of the keypad 15.

**[0046]** The operation of the shower cubicle 1 according to the invention entails that the keypad 15, during the execution of an operating cycle, is always deactivated so that any films of water produced by the condensation of water vapor which is present inside the cubicle or water sprays which strike the keypad cannot in any case cause the accidental sending of impulses to the electronic control unit 16.

**[0047]** If the user wishes to modify one or more parameters of the operating cycle performed by the shower cubicle, change the type of cycle or perform any operation that entails the use of the keypad 15, pressing the switch 21 with a foot temporarily suspends the operating cycle currently in progress and the functions of the shower cubicle 1 which potentially may cause incorrect operation

of the keypad 15, as well as a simultaneous activation of said keypad.

**[0048]** Moreover, the user is facilitated in determining the position of the switch 21 by the presence of the lamp or LEDs, which light up said switch when it is not pressed.

**[0049]** The keypad 15 therefore remains activated until the user, by lifting his foot off the switch 21, allows the switch to return to the inactive state, causing the deactivation of the keypad 15 and the resumption of the operating cycle from the point where it had been suspended, unless different orders have been imparted by the user to the shower cubicle by means of the keypad 15 in the time interval during which it was active.

**[0050]** If the shower cubicle 1 according to the invention is in the standby condition, the keypad 15 is deactivated, so as to allow easy cleaning of the cubicle without the possibility of an unwanted activation thereof caused by water sprays accidentally directed toward the keypad 15.

**[0051]** It has thus been found that the invention has achieved the intended aim and objects, a shower cubicle having been provided which allows to provide a broad range of programs for personal hygiene and/or relaxation or therapeutic treatments, making it easy and safe to program on the part of the user.

**[0052]** Another object achieved by the invention is to offer high safety and stability in use.

**[0053]** Another object achieved by the invention is to allow its easy cleaning, which can be performed without requiring particular precautions.

**[0054]** The invention is of course susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

**[0055]** Thus, for example, it is possible to provide said at least one device by means of a switch of the two-state type; in this solution, a first pressure on the part of the user causes the temporary activation of the keypad and/or the simultaneous suspension of the operating cycle of the shower cubicle, while the deactivation of the keypad and/or any resumption of the operating cycle occurs following a second pressure on the two-state switch by the user.

**[0056]** The switch, whether of the single-state or two-state type, may further be arranged at an internal face 8a of a wall 8, so that it can be operated by the user are with one hand.

**[0057]** The user must manually deactivate the keypad before performing shower cubicle cleaning operations; otherwise, sprays of water used for washing may in fact affect the keypad, causing the unwanted activation of the cubicle.

**[0058]** The materials used, as well as the dimensions which constitute the individual components of the invention, may of course be more pertinent according to the specific requirements.

**[0059]** 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.

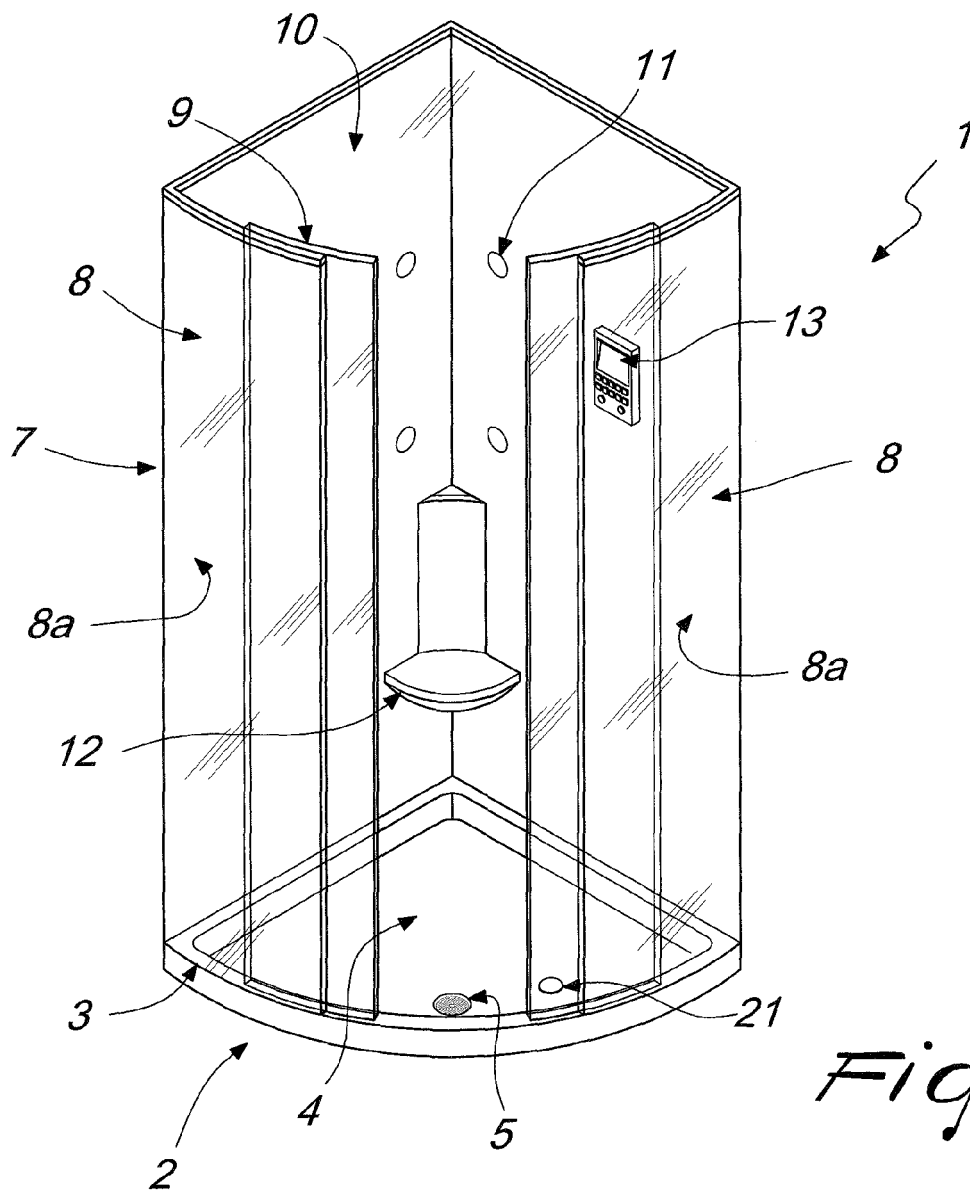
**[0060]** The characteristics indicated as advantageous, convenient or the like may also be omitted or replaced by with equivalents.

**[0061]** The disclosures in Italian Patent Application No. TV2004A000133 from which this application claims priority are incorporated herein by reference.

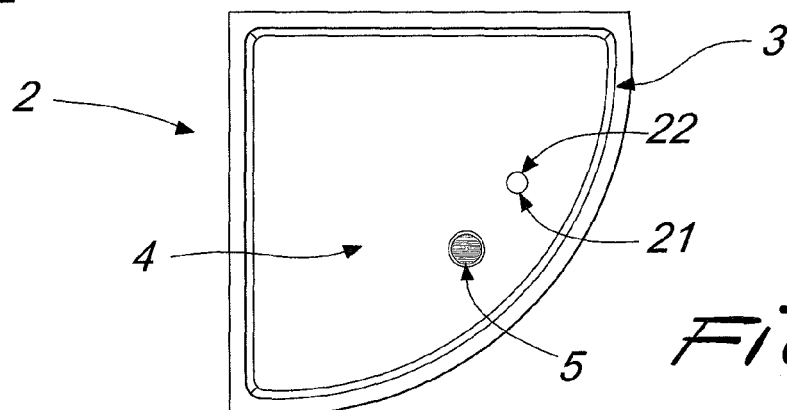
**[0062]** Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

## Claims

1. A shower cubicle, comprising a shower tray, a compartment which can be opened for user access, and internally at least one keypad unit for controlling and setting the operating cycle of said shower cubicle, **characterized in that** said keypad unit comprises a keypad, which is normally deactivated even when said shower cubicle is operating, is controlled by at least one device, which can be operated selectively by the user, for activating temporarily said keypad and simultaneously suspending said operating cycle of said shower cubicle. 5
2. The shower cubicle according to claim 1, **characterized in that** said device for temporarily activating said keypad and simultaneously suspending said operating cycle of said shower cubicle is constituted by at least one switch of the single-state type. 20
3. The shower cubicle according to claim 1, **characterized in that** said device for temporarily activating said keypad and simultaneously suspending said operating cycle of said shower cubicle is constituted by at least one switch of the two-state type. 25
4. The shower cubicle according to one or more of the preceding claims, **characterized in that** said at least one switch is located on the bottom or on a wall of said shower tray. 30
5. The shower cubicle according to claims 1 and 4, **characterized in that** said keypad comprises a touchscreen which operates with capacitive, resistive or infrared technology or a capacitive and/or optical button pad in front of which there is a sheet of dielectric material. 35
6. The shower cubicle according to claims 1 and 5, **characterized in that** said at least one device can be arranged in a chosen point of said shower tray, within a seat formed on said bottom of said shower tray, said seat being a through seat and being arranged so that its axis is vertical, allowing to arrange within it a terminal of one or more electrical cables arranged below said bottom. 40
7. The shower cubicle according to claims 1 and 6, **characterized in that** said seat is located proximate to said perimetric edge of said shower tray, in a position which can be reached easily, intentionally and not inadvertently, by the foot of said user while standing on said shower tray. 45
8. The shower cubicle according to claims 1 and 7, **characterized in that** said at least one switch is connected electrically to an electronic control unit for managing the functions of said shower cubicle. 50
9. The shower cubicle according to claims 1 and 8, **characterized in that** said at least one switch is connected electrically directly to an electronic board, which is connected to said electronic control unit, for activating the functions of said shower cubicle. 55
10. The shower cubicle according to one or more of the preceding claims, **characterized in that** said at least one switch has a level of protection against water infiltrations of at least IP 66 or higher, according to the IEC 529 standard.
11. The shower cubicle according to claims 1 and 10, **characterized in that** said at least one switch is connected to a LED or to a lamp, which also can be accommodated within said seat or within the switch and are lit when said at least one switch is not pressed.
12. The shower cubicle according to claims 1 and 11, **characterized in that** said at least one switch is lit and constitutes a power-on button when said shower cubicle is in the standby condition.



*Fig. 1*



*Fig. 2*

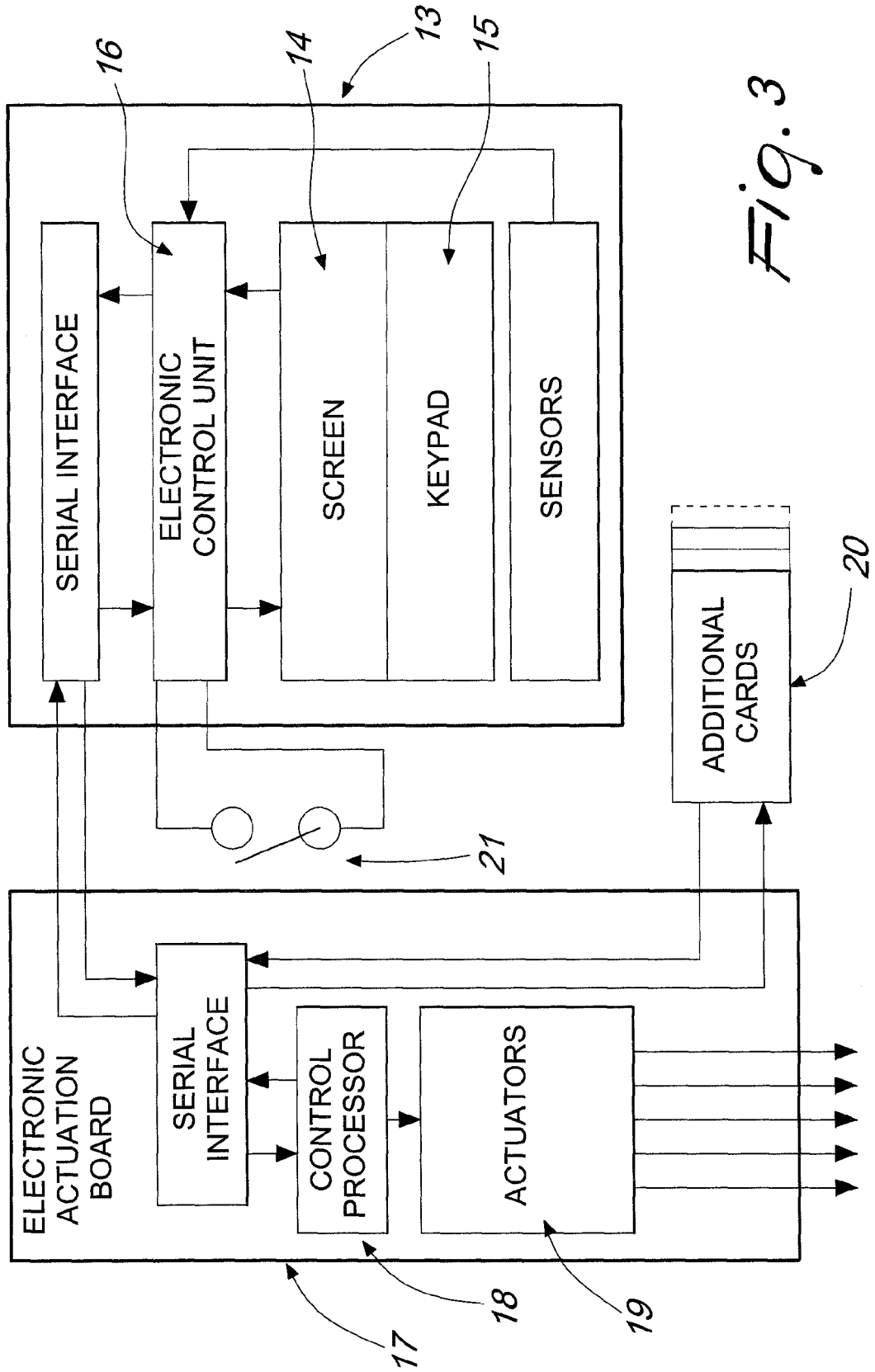


Fig. 3



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 05 11 0685

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 5 327 473 A (WEIGERT ET AL) 5 July 1994 (1994-07-05) * column 2, line 28 - line 33 * * column 2, line 44 - line 59 * * column 5, line 46 - column 6, line 1 * * column 6, line 45 - line 64 * -----	1-5,8-12	E03C1/05
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			TECHNICAL FIELDS SEARCHED (IPC)
			E03C
The present search report has been drawn up for all claims			
Place of search <b>Munich</b>		Date of completion of the search <b>14 March 2006</b>	Examiner <b>Flygare, E</b>
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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**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 05 11 0685

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14-03-2006

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