

ELECTRIC SHOWER

The present Patent of Invention relates to an "ELECTRIC SHOWER", or more particularly to different technical and functional improvements, obtained by means of mechanical, electrical and structural arrangements specially developed aiming the characterization of a compact electric shower.

Obviously, the compact form could be obtained due to a new construction applied to the shower body that, in this case, had its height substantially reduced, thus requiring a new arrangement of the electrical and mechanical components, including the adoption of a completely new temperature selection mechanism, since, in contrast with the conventional models, it is not shown in the form of a lever which acts radially from outside to inside the device, but in the form of a top cover that, by means of the bottom face, has a kind of cube for guiding it in a direction so as to allow its very short rotation both clockwise and counterclockwise and, in this condition, an inner selector plate is also rotated in the same way, thus providing a different temperature selection mode.

The second object of the invention is to provide different movable electrical contacts, that is, in a first constructive version, the contacts are knife-shaped and fixed in springiness plates, one of them being integral or being a constructive part of a diaphragm which moves with the hydraulic pressure and due to this movement there occurs the opening or closing of said contacts, characterizing an effective actuation means, since it depends solely and exclusively on the pressure of the shower feeding water.

In a second constructive version, it is also provided a completely novel actuation system for opening and closing the contacts, wherein two of said contacts are fixed, while the other two are of the laminar and rectangular type, being integrated by an end to a coplanar support that in turn operates as a seesaw, having an articulately fixed end, while on its intermediate portion there acts a vertical pin of the diaphragm actuation system and thus said support swings as if it were a seesaw, lifting and lowering the movable contacts, towards or outwards the fixed contacts and, in this condition, the shower electrical resistor is turned on and off.

In a third constructive version, it is provided another completely novel actuation system for opening and closing the contacts, mainly

characterized in that the movable contacts are mounted in a swinging piece or support as a rocker that, through one end, can be actuated by the diaphragm vertical shaft, while in the opposite end, it houses two electrical contacts moving them up and down so that they can contact or not the other fixed contacts, allowing or interrupting the electrical current to pass towards the shower resistor. This mechanism, besides being different from those currently known, also allows an appropriate operation of the contacts, even rendering them self-cleaning, and also the rocker configuration imparts the support a lever effect which cooperates with the device operation and thus the diaphragm actuation becomes smoother and avoids the excessive stress of the movable components, considerably increasing the device useful life.

Therefore, one of the objects of the invention is exactly a combination of several mechanical, electrical and structural arrangements, not only for characterizing a substantially more compact shower than the existing ones, but also to provide a device that can operate with higher accuracy and with a really reduced manufacturing price.

For a better comprehension of the present Patent of Invention, it follows a detailed description thereof, reference being made to the attached drawings, in which:

- FIGURE 1 is a side view emphasizing the shower body profile;
- FIGURE 2 shows a front elevation view, also exhibiting the shower body oval profile;
- FIGURE 3 represents a rear elevation view, emphasizing the cold water inlet and the tiny shower or manual douche water outlet;
- FIGURE 4 illustrates a bottom view, emphasizing the shower strainer;
- FIGURE 5 represents a sectional side view showing all inner details of the shower according to the first constructive version;
- FIGURES 6 to 8 are enlarged details of figure 5 emphasizing other particulars of the first constructive version shower;
- FIGURE 9 is a top view emphasizing the shower electrical contacts;
- FIGURE 10 represents a sectional side view showing all inner details of the shower according to the second constructive variation;
- FIGURE 11 shows an enlarged portion of figure 10, emphasizing the actuation mechanism of the shower electrical contacts of the second constructive version;
- FIGURE 12 is a top view emphasizing the shower electrical contacts of the

second constructive version;

FIGURE 13 is an enlarged detail of the previous figure, emphasizing the shower electrical contacts of the second constructive version;

FIGURES 14 and 15 are similar to the previous figures, emphasizing the fact that the electrical contacts and the temperature selector switch can be mounted in another position, 180° inverted relative to that showed in figures 12 and 13;

FIGURE 16 represents a sectional side view showing all inner details of the shower according to the third constructive version;

FIGURES 17 and 18 show enlarged details of figure 16, emphasizing the actuation mechanism of the shower electrical contacts of the third constructive version;

FIGURE 19 is a top view emphasizing the shower electrical contacts of the third constructive version;

FIGURE 20 is an enlarged detail of the previous figure, emphasizing the shower electrical contacts of the third constructive version; and

FIGURES 21 and 22 are similar to the previous figures, however, emphasizing the fact that the electrical contacts and the temperature selector switch can be mounted in another position, 180° inverted relative to that showed in figures 12 and 13;

According to these illustrations and their details, more particularly figures 1 to 6, the present Patent of Invention, "ELECTRIC SHOWER" is characterized in that it comprises a shell-shaped body, defined by four injected pieces made of plastic, the first one being defined as the body itself (1) spherically cambered upwards or in a shell shape upside down, completely open on the bottom portion, wherein it is defined a cylindrical engagement groove (2) for a separator disk (3), being positioned under it the strainer or spreader (4) thus forming, between the latter one and the disk, a first distribution chamber (5) with a side tubular outlet (6) for the manual tiny shower (not shown), while inside the body (1) there is formed a wet chamber or heating chamber (7) that, besides including a water inlet rear connection (8), is also limited in the top portion by an intermediate and horizontal wall (9), over which it is formed the dry chamber or assembling chamber (10) of the electrical part or movable contacts mechanism (11) that, through the top portion, is closed by the temperature selection device (12), while through the bottom portion, it is mechanically actuated by means

of an actuation mechanism which works due to the pressure exerted by the water that enters the connection (8), this mechanism being configured together with the separator disk (3) that, for said purpose, has a central elevation shaped as a vertical siphon tube (13) the top end of which
5 terminates exactly under the bottom surface of diaphragm (15), its inner configuration being something similar to a frustum sealing seat (14) and forming an inlet point or passage point to the water coming from the heating chamber (7) towards the distribution chamber (5), however, this passage is automatically controlled by the assembly defined by the diaphragm (15) that
10 has a cylindrical perimeter (16) fixed inside an equally cylindrical housing (17) existing in the separation wall (9), said diaphragm having also its central sector overlapped by a rigid plate (18), so that between said plate and portion (16), said diaphragm can exhibit a springiness looping (19), as also said rigid plate (18) has a first central detail in the shape of a shutter or
15 frustum spigot (20) vertically protruded downwards and oriented to be housed inside the sealing seat (14) of siphon tube (13), said shutter cooperating to be moved vertically upwards or downwards and forming the main opening and closing element of the water passage from the heating chamber (7) to the distribution chamber (5), this movement being guided
20 since said shutter (20) is also elongated over the rigid plate (18), thus configuring a guide vertical rod (21) in different diameters, slidely housed inside a suspended tubular sector (22) that in turn has its top end integrated with a true circular upside down cap (23), the bottom edge or outer diameter of which structurally integrates with the corresponding diameter of that
25 opening or cylindrical portion (17) of the separation wall (9), and thus the inner portion of said cap defines the dry compartment for assembling the electrical assembly (11).

The electrical assembly (11) is initially formed by pins or contacts in the shape of pins (24) which vertically cross the rigid plate (18) and the
30 diaphragm (15), exposing under this latter, wherein they configure coupling means for the electrical resistor (25) that, in turn, is mounted such as to be glued around a cage-type circular support (26) having cylindrical receptacles (27), these latter housing internally the terminals of said resistor (25) so that at this point the electrical connection with the pins (24) can be
35 carried out, whose top ends over the rigid plate (18) are shaped as lens heads and constitute the movable contacts (28) of resistor (25) which are

under and aligned with other similar movable contacts (29), however, they are mounted in fixed terminals in a springiness plate (30) in the shape of a disk that, through the top face, provides means for said terminals to be connected to the wiring (F), said plate (30) being still guided by its outer diameter inside the cylindrical vertical wall of cap (23), while through its central hole there passes said suspended tubular sector (22) that, in turn, has two helical springs, e.g. an outer spring (31) and an inner spring (32), the first of them acting directly over the plate (30), while the second involves the rod (21) of diaphragm (15) keeping it normally pressed downwards, however, the top ends of said rod (21) are shaped as narrow openings (33) and pass over an inner flange (34) existing in the top of the tubular sector (22), limiting at this point the downwards movement of said diaphragm (15) upon the opening of said contacts (28) and (29), obviously when there is no hydraulic pressure inside the heating chamber (7) and, in this condition, the electrical resistor (25) is turned off, however, in an opposite situation, the electrical contacts (28-29) close and turn on the resistor (25), but, even though, this will depend on an ON/OFF and temperature selector switch (35).

The selector switch (35) is shaped as a true circular plate, the front forked edge (36) of which is set in a vertical pin (37) that, in turn, has its top end integrated with a top cover (38) which extends following the top spherical shape of body (1), that is, it is shaped as an ordinarily rectangular plate that extends from the rear portion to the front portion of body (1), terminating in the shape of a front button (39) cooperating such that said cover can operate as a selector switch and for this purpose said cover has its bottom face provided with protrusions (40) vertically oriented downwards and having its rear edge shaped as a narrow opening (41), such that said sectors may penetrate in locked fashion in an also ordinarily circular collar (42) existing in the cap (23) top portion, said protrusion (40) being able to rotate together with said cover (38) and according to an appropriate angle for the rod (37) to move in the same way as the selector plate (35) does, thus allowing the selection (winter - summer - off) of the shower.

As illustrated in figure 7, in protrusion (41) and under cover (38), it is engaged the wire press (43) that, in turn, includes orifices for the wiring (F) to pass, including the ground wire (Ft) that in turn is of the wrapped type and also vertically crosses the water inlet point of connection (8), wherein it

has an unwrapped portion (Fd) and again wrapped, it continues and extends under the separator (3), terminating inside the siphon tube (13), wherein its terminal is equally unwrapped (Fd), thus configuring the leakage current capture system.

- 5 As figure 8 detail illustrates, the spreader (4) is coupled into the body (1) by means of thread (44), under which the inner side of said separator has a channel (45) and a sealing lip (46), both vertical, which engage to another channel (47) and another sealing lip (48) provided in the perimeter and bottom face of the separator disk (3) that finally engages in the same way,
10 that is to say, by means of its vertical lip (49) and a chute (50) existing in the inner diameter of sector (2) of body (1).

The assembly operation thus described is extremely simple, as shown in figure 5, wherein it is noticed that the water intake occurs through connection (8) invading the heating chamber (7) that, in turn, is normally
15 kept flooded and, accordingly, the electrical resistor (25) is kept submerged, thus preventing its operation without the presence of water. The water intake in chamber (7) causes a pressure increase that is enough for the diaphragm (15) to be actuated. This actuation consists in its displacement upwards and accordingly the plate (18) is moved causing the contacts (28-
20 29) to be closed and, in this condition, the electrical current passes from the wiring (F) to the resistor (25), causing it to operate. At the same time, there also occurs the upward displacement of the shutter or spigot (20), releasing the warmed water in chamber (7) so that it may flow through the siphon (13) flooding the chamber (5), wherein it exists through the spreader (4). In
25 this condition, there also occurs the leakage current capture by means of the system formed by the wire (Ft). While there is pressure inside chamber (7), the system keeps on operating; otherwise the diaphragm (15) returns to its original position, closing the passage (14) and, at the same time, it turns off the contacts (28-29) and accordingly, the electrical resistor (25) is turned
30 off.

The selector plate (35) allows switching among the several contacts (28-29), as well as the total insulation among them, that is to say, depending on the position of said plate, said contacts do not get into contact to each other even when the water intake occurs. In this condition, the device is
35 turned off, however, in other positions, such as illustrated in figure 9, said plate can be moved to allow the device operation in two distinct conditions,

winter or summer. This switching is carried out by means of button (39) that, when displaced to the right or to the left, causes the cover (38) and the pin (37) to move, this latter causing the selector plate (35) to rotate and thus the device may be turned on/off or put into operation in the "summer or
5 winter" temperatures.

The first spring (31) composes a means so that plate (30) of contacts (29) can be normally kept pressed downwards and against the contacts (28). Spring (32) exerts a slight pressure against the rigid plate (18) of diaphragm (15), and while it ceases the pressure inside the heating chamber (7), the
10 assembly return is favored by the pressure of said spring (32).

In a second constructive variation, as shown in figures 10 and 11, it is provided a different actuation mechanism (51); although it is also composed of a vertical rod (21), in this case, however, said rod is intermediately enlarged in the shape of a disk (52), positioned under the wall (9), wherein
15 it finds engagement details (53) and (54), the first detail being a lower backward movement towards the disk itself, while the second one is a vertical neck guide which houses the top portion of said rod (21) and a spring (55) that keeps it normally pressed downwards and further this part of the rod (21) has its top end sufficiently exposed for coupling with the
20 contacts mechanism (11), while through the bottom portion, said rod (21) configures the shutter or frustum spigot (20) vertically protruded downwards and oriented to be housed inside the sealing seat (14) of the siphon tube (13), where said shutter cooperates to be vertically moved
25 upwards or downwards by means of a circular diaphragm (56) that, through the central region or inner diameter, is coupled under the disk (52) of rod (21), while its outer diameter is vertically turned downwards according to a cylindrical portion (57), adjusted inside an equally cylindrical protrusion (58) existing under the wall (9), wherein that engagement detail (53) is sufficiently magnified so that the diaphragm (56) and the rod (21) may be
30 displaced upwards by the pressure of the water that enters through the connection (8), and thus the actuation of the electrical part (11) takes place, turning on and off the electrical resistor (25).

The electrical assembly (11) is illustrated in detail in figures 11 to 13, where it is noted that said assembly (11) is composed of a dielectric support
35 (59) having an ordinary laid down "T"-shape, having its central branch terminal (60) coupled with the top end of the actuation rod (21), while its

transversal branch has the terminals provided with drawer-type engagements (61) for the rear ends of the movable laminar contacts (62) that, on the one hand, are interconnected to the electrical feeding wires (F) while through the free ends, they are positioned under the inverted "L" fixed contacts (63), the top ends of which are horizontal and coplanarly facing against each other, while the bottom end protrudes vertically downwards crossing said wall (9) to form two coupling terminals (64) for the resistor (25), the third terminal of which is represented by a third flexible laminar contact (65) that, through the rear end, similarly crosses the wall (9), while through the front end, it is positioned under an extension or tab (66) of one of the "L" contacts (63), such that said tab and the movable contacts (62) may selectively contact or not the fixed contacts (63) by means of a multiple-position switch (67) configured by a dielectric material having a tubular central portion (68) pivotly thrust on a pin (69) that vertically raises out of wall (9), wherein said tubular portion has a branch radially facing forwards (70) and engaged with the temperature selector (38), while on the opposite side of said tubular sector (68) there are other three radial protrusions, a bottom singular protrusion (71), the other two protrusions being equal to each other (72), wherein the first is guided to pass under the tab or the third contact (65), pushing it against the detail (66) of one of the fixed contacts (63), thus establishing the electrical connection of this contact with the corresponding terminal of the electrical resistor (25), while the other two (72) work as insulation tabs and may be positioned or not between the terminals of the fixed (63) and movable (62) contacts and thus, when the shower is actuated, if said tabs are between the corresponding portions of the contacts, the electrical connection will surely not be carried out, however, in an opposite situation, the electrical resistor (25) will surely be actuated.

The dielectric support (59) is guided and its upward and downward movements are stably driven by means of a rear cut (73) and a pin (74) that vertically raises out of wall (9).

As illustrated in figures 14 and 15, in a constructive variation, the same modified electrical assembly (11) and all its actuation details, including the switch (67), may be inversely mounted according to a 180° displacement in relation to the central point defined by point (60).

In accordance with the above description, it is noted that the shower

operation, according to the second constructive variation, is really simple as can be noted from figure 10, where it is seen that the water intake occurs through connection (8) invading the heating chamber (7) that, in turn, is normally kept flooded and, accordingly, the electrical resistor (25) is kept submerged, thus preventing its operation without the presence of water. The water intake in chamber (7) causes a pressure increase that is enough for the diaphragm (56) to be actuated. This actuation consists in its displacement upwards and accordingly the pin (21) is moved causing the contacts (62-63) to be closed and, in this condition, the electrical current passes from the wiring (F) to the resistor (25), causing it to operate. At the same time, there also occurs the upward displacement of the shutter or spigot (20), releasing the warmed water in chamber (7) so that it may flow through the siphon (13) flooding the chamber (5), wherein it exists through the strainer (4). In this condition, there also occurs the leakage current capture by means of the system formed by the wire (Ft). While there is pressure inside chamber (7), the system keeps on operating; otherwise the diaphragm (56) returns to its original position, closing the passage (13) and, at the same time, it turns off the contacts (62-63).

The selector (38), by means of its button (39) and the switch (67), allows switching among the several contacts (62-63-66-65), as well as the total insulation among them, that is to say, depending on the position, said contacts do not get into contact to each other even when the water intake occurs. In this condition, the device is turned off, however, in other positions, the selector can be moved to allow the device operation in two distinct conditions, winter or summer. This switching is carried out by means of button (39) that, when displaced to the right or to the left, causes the cover (38) and the switch (67) to move, and thus the device may be turned on/off or put into operation in the "summer or winter" temperatures.

By means of figure 11, is also noticeable that the pair of laminar contacts (62) allows an adequate efficiency when in operation, not only for being fixed to a springiness structure, but also by virtue of its flexibility, also rendering the contacts self-cleaning.

In a third constructive variation illustrated in figures 16 to 22, it is provided a different actuation mechanism for the contacts portion, seen in greater details in figure 18, where it is noticed that said mechanism is composed of a movable dielectric support as a rocker (75) that, in a top

view, has an ordinary laid down "Y"-shape, having its ends in different planes, wherein the highest plane is the sole and rear ramification (76), while the front and bifurcated plane (77) remains in a lower position, and further, said support or rocker (75) has its intermediate portion in a pivoting fashion (78), cooperating so that said support may swing raising and lowering its ends and for this purpose the rear end (76) is configured to be actuated by the actuation mechanism (51) that, for this purpose, has its rod (21) provided with a top extension (78) terminating in a self-locking head (79) which is coupled with an adequate hole existing in the corresponding portion of said ramification (76) of the swinging support (75) and, at this point, a spring (80) is arranged involving the extension (78) and, at the same time, the top and bottom ends of said spring (80) are respectively supported between the branch (76) and a step/washer (81) existing in the bottom portion of said extension (78), thus configuring an appropriate springiness for actuating upwards the corresponding portion (76) of the rocker support (75), also this movement being guided by a pin (82) which passes vertically and freely through a distal hole existing in branch (76), wherein said pin, by means of the bottom end, is thrust into a vertical protrusion (83) that raises out of wall (9), while through the top end said pin includes a stopper head (84) for the branch (76) movement, so as to correctly raise and lower the bifurcated end (77) of support (75), where the movable contacts (85) are fixed, that, in the top portion, are interconnected with the electrical feeding wires (F), while in the bottom portion, they are aligned on the inverted "L" fixed contacts (63), the top ends of which are horizontal and coplanarly facing against each other, while the bottom end protrudes vertically downwards crossing said wall (9) to form (figure 16) two coupling terminals (64) for the resistor (25), the third terminal of which is represented by a third flexible laminar contact (65) that, through the rear end, similarly crosses the wall (9), while through the front end, it is positioned under an extension or tab (66) of one of the "L" contacts, such that said tab and the movable contacts (85) may selectively contact or not the fixed contacts (63) by means of a multiple-position switch (67) the configuration of which is the same of that of the previous constructive version, even in relation to its operation.

As illustrated in figures 21 and 22, in another constructive variation, the same electrical actuation assembly defined by the rocker (75) and all its

actuation details, including the switch (67), may be inversely mounted according to a 180° displacement in relation to the assembly central point (78).

In this last constructive variation, the shower operation is substantially the same of that of the previous version, as illustrated in figures 16, 17 and 18, where it can be seen that the water intake occurs through connection (8) invading the heating chamber (7) that, in turn, is normally kept flooded and, accordingly, the electrical resistor (25) is kept submerged, thus preventing its operation without the presence of water. The water intake in chamber (7) causes a pressure increase that is enough for the diaphragm (56) to be actuated. This actuation consists in its displacement upwards and accordingly the pin (21) is moved causing the rocker (75) to swing and close the contacts (85-63) and, in this condition, the electrical current passes from the wiring (F) to the resistor (25), causing it to operate. At the same time, there also occurs the upward displacement of the shutter or spigot (20), releasing the warmed water in chamber (7) so that it may flow through the siphon (13) flooding the chamber (5), wherein it exists through the strainer (4). In this condition, there also occurs the leakage current capture by means of the system formed by the wire (Ft). While there is pressure inside chamber (7), the system keeps on operating; otherwise the diaphragm (56) returns to its original position, closing the passage (13) and, at the same time, it turns off the contacts (85-63).

The selector (12), by means of its button (39) and the switch (67), allows switching among the several contacts (85-63-62-65), as well as the total insulation among them, that is to say, depending on the switch position, said contacts do not get into contact to each other even when the water intake occurs. In this condition, the device is turned off, however, in other positions, the selector can be moved to allow the device operation in two distinct conditions, winter or summer. This switching is carried out by means of button (39) that, when displaced to the right or to the left, causes the cover (38) and the switch (67) to move, and thus the device may be turned on/off or put into operation in the "summer or winter" temperatures.

By means of figure 18, is also noticeable that the pair of movable contacts (85) allows an adequate efficiency when in operation, not only for being fixed to a rocker, but also for remaining springiness, rendering the contacts self-cleaning.

CLAIMS

- 1) "ELECTRIC SHOWER", characterized in that it comprises a shell-shaped body, defined by four injected pieces made of plastic, the first one being defined as the body itself (1) spherically cambered upwards or in a shell shape upside down, completely open on the bottom portion, wherein it is defined a cylindrical engagement groove (2) for a separator disk (3), being positioned under it the strainer or spreader (4) thus forming, between the latter one and the disk, a first distribution chamber (5) with a side tubular outlet (6) for the manual tiny shower (not shown), while inside the body (1) there is formed the wet chamber or heating chamber (7) that, besides including a water inlet rear connection (8), is also limited in the top portion by an intermediate and horizontal wall (9), over which it is formed the dry chamber or assembling chamber (10) of the electrical part or movable contacts mechanism (11) that, through the top portion, is closed by the temperature selection device (12), while through the bottom portion, it is mechanically actuated by means of an actuation mechanism which works due to the pressure exerted by the water that enters the connection (8).
- 2) "ELECTRIC SHOWER", according to claim 1, characterized in that the electrical part or contacts (11) actuation mechanism is configured together with the separator disk (3) that, for said purpose, has a central elevation shaped as a vertical siphon tube (13) the top end of which terminates exactly under the bottom surface of diaphragm (15), its inner configuration being something similar to a frustum sealing seat (14) and forming an inlet point or passage point to the water coming from the heating chamber (7) towards the distribution chamber (5), however, this passage is automatically controlled by the assembly defined by the diaphragm (15) that has a cylindrical perimeter (16) fixed inside an equally cylindrical housing (17) existing in the separation wall (9), said diaphragm having also its central sector overlapped by a rigid plate (18), so that between said plate and portion (16), said diaphragm can exhibit a springiness looping (19), as also said rigid plate (18) has a first central detail in the shape of a shutter or frustum spigot (20) vertically protruded downwards and oriented to be housed inside the sealing seat (14) of siphon tube (13), said shutter cooperating to be moved vertically upwards or downwards and forming the main opening and closing element of the water passage from the heating chamber (7) to the distribution chamber (5), this movement being guided



since said shutter (20) is also elongated over the rigid plate (18), thus configuring a guide vertical rod (21) in different diameters, slidely housed inside a suspended tubular sector (22) that in turn has its top end integrated with a true circular upside down cap (23), the bottom edge or outer diameter of which structurally integrates with the corresponding diameter of that opening or cylindrical portion (17) of the separation wall (9), and thus the inner portion of said cap defines the dry compartment for assembling the electrical assembly (11).

3) "ELECTRIC SHOWER", according to claim 1, characterized in that the electrical assembly (11) is initially formed by pins or contacts in the shape of pins (24) which vertically cross the rigid plate (18) and the diaphragm (15), exposing under this latter, wherein they configure coupling means for the electrical resistor (25) that, in turn, is mounted such as to be glued around a cage-type circular support (26) having cylindrical receptacles (27), these latter housing internally the terminals of said resistor (25) so that at this point the electrical connection with the pins (24) can be carried out, whose top ends over the rigid plate (18) are shaped as lens heads and constitute the movable contacts (28) of resistor (25) which are under and aligned with other similar movable contacts (29), however, they are mounted in fixed terminals in a springiness plate (30) in the shape of a disk that, through the top face, provides means for said terminals to be connected to the wiring (F), said plate (30) being still guided by its outer diameter inside the cylindrical vertical wall of cap (23), while through its central hole there passes said suspended tubular sector (22) that, in turn, has two helical springs, e.g. an outer spring (31) and an inner spring (32), the first of them acting directly over the plate (30), while the second involves the rod (21) of diaphragm (15) keeping it normally pressed downwards, however, the top ends of said rod (21) are shaped as narrow openings (33) and pass over an inner flange (34) existing in the top of the tubular sector (22), limiting at this point the downwards movement of said diaphragm (15) upon the opening of said contacts (28) and (29), obviously when there is no hydraulic pressure inside the heating chamber (7) and, in this condition, the electrical resistor (25) is turned off, however, in an opposite situation, the electrical contacts (28-29) close and turn on the resistor (25), but, even though, this will depend on an ON/OFF and temperature selector switch (35).



4) **"ELECTRIC SHOWER"**, according to claim 3, characterized in that the selector switch (35) is shaped as a true circular plate, the front forked edge (36) of which is set in a vertical pin (37) that, in turn, has its top end integrated with a top cover (38) which extends following the top spherical shape of body (1), that is, it is shaped as an ordinarily rectangular plate that extends from the rear portion to the front portion of body (1), terminating in the shape of a front button (39) cooperating such that said cover can operate as a selector switch and for this purpose said cover has its bottom face provided with protrusions (40) vertically oriented downwards and having its rear edge shaped as a narrow opening (41), such that said sectors may penetrate in locked fashion in an also ordinarily circular collar (42) existing in the cap (23) top portion, said protrusion (40) being able to rotate together with said cover (38) and according to an appropriate angle for the rod (37) to move in the same way as the selector plate (35) does, thus allowing the selection (winter - summer - off) of the shower.

5) **"ELECTRIC SHOWER"**, according to claim 4, characterized in that in protrusion (41) and under cover (38), it is engaged the wire press (43) that, in turn, includes orifices for the wiring (F) to pass, including the ground wire (Ft) that in turn is of the wrapped type and also vertically crosses the water inlet point of connection (8), wherein it has an unwrapped portion (Fd) and again wrapped, it continues and extends under the separator (3), terminating inside the siphon tube (13), wherein its terminal is equally unwrapped (Fd), thus configuring the leakage current capture system.

6) **"ELECTRIC SHOWER"**, according to claim 1, characterized in that the spreader (4) is coupled into the body (1) by means of thread (44), under which the inner side of said separator has a channel (45) and a sealing lip (46), both vertical, which engage to another channel (47) and another sealing lip (48) provided in the perimeter and bottom face of the separator disk (3) that finally engages in the same way, that is to say, by means of its vertical lip (49) and a chute (50) existing in the inner diameter of sector (2) of body (1).

7) **"ELECTRIC SHOWER"**, according to claim 1, characterized in that in a second constructive variation, it is provided a different actuation mechanism (51); although it is also composed of a vertical rod (21), in this case, however, said rod is intermediately enlarged in the shape of a disk (52), positioned under the wall (9), wherein it finds engagement details (53)



and (54), the first detail being a lower backward movement towards the disk itself, while the second one is a vertical neck guide which houses the top portion of said rod (21) and a spring (55) that keeps it normally pressed downwards and further this part of the rod (21) has its top end sufficiently exposed for coupling with the contacts mechanism (11), while through the bottom portion, said rod (21) configures the shutter or frustum spigot (20) vertically protruded downwards and oriented to be housed inside the sealing seat (14) of the siphon tube (13), where said shutter cooperates to be vertically moved upwards or downwards by means of a circular diaphragm (56) that, through the central region or inner diameter, is coupled under the disk (52) of rod (21), while its outer diameter is vertically turned downwards according to a cylindrical portion (57), adjusted inside an equally cylindrical protrusion (58) existing under the wall (9), wherein that engagement detail (53) is sufficiently magnified so that the diaphragm (56) and the rod (21) may be displaced upwards by the pressure of the water that enters through the connection (8), and thus the actuation of the electrical part (11) takes place, turning on and off the electrical resistor (25).

8) "ELECTRIC SHOWER", according to claim 7, characterized in that the electrical assembly (11) of the second constructive version is composed of a dielectric support (59) having an ordinary laid down "T"-shape, having its central branch terminal (60) coupled with the top end of the actuation rod (21), while its transversal branch has the terminals provided with drawer-type engagements (61) for the rear ends of the movable laminar contacts (62) that, on the one hand, are interconnected to the electrical feeding wires (F) while through the free ends, they are positioned under the inverted "L" fixed contacts (63), the top ends of which are horizontal and coplanarly facing against each other, while the bottom end protrudes vertically downwards crossing said wall (9) to form two coupling terminals (64) for the resistor (25), the third terminal of which is represented by a third flexible laminar contact (65) that, through the rear end, similarly crosses the wall (9), while through the front end, it is positioned under an extension or tab (66) of one of the "L" contacts (63), such that said tab and the movable contacts (62) may selectively contact or not the fixed contacts (63) by means of a multiple-position switch (67) configured by a dielectric material having a tubular central portion (68) pivotly thrust on a pin (69) that vertically raises out of wall (9), wherein said tubular portion has a branch



radially facing forwards (70) and engaged with the temperature selector (38), while on the opposite side of said tubular sector (68) there are other three radial protrusions, a bottom singular protrusion (71), the other two protrusions being equal to each other (72), wherein the first is guided to pass under the tab or the third contact (65), pushing it against the detail (66) of one of the fixed contacts (63), thus establishing the electrical connection of this contact with the corresponding terminal of the electrical resistor (25), while the other two (72) work as insulation tabs and may be positioned or not between the terminals of the fixed (63) and movable (62) contacts and thus, when the shower is actuated, if said tabs are between the corresponding portions of the contacts, the electrical connection will surely not be carried out, however, in an opposite situation, the electrical resistor (25) will surely be actuated.

9) "ELECTRIC SHOWER", according to claim 7, characterized in that the dielectric support (59) is guided and its upward and downward movements are stably driven by means of a rear cut (73) and a pin (74) that vertically raises out of wall (9).

10) "ELECTRIC SHOWER", according to claim 3, characterized in that in a constructive variation, the same modified electrical assembly (11) and all its actuation details, including the switch (67), may be inversely mounted according to a 180° displacement in relation to the central point defined by point (60).

11) "ELECTRIC SHOWER", according to claim 3, characterized in that in a third constructive variation, it is provided a different actuation mechanism for the contacts portion and, for this purpose, it is included a movable dielectric support as a rocker (75) that, in a top view, has an ordinary laid down "Y"-shape, having its ends in different planes, wherein the highest plane is the sole and rear ramification (76), while the front and bifurcated plane (77) remains in a lower position, and further, said support or rocker (75) has its intermediate portion in a pivoting fashion (78), cooperating so that said support may swing raising and lowering its ends and for this purpose the rear end (76) is configured to be actuated by the actuation mechanism (51) that, for this purpose, has its rod (21) provided with a top extension (78) terminating in a self-locking head (79) which is coupled with an adequate hole existing in the corresponding portion of said ramification (76) of the swinging support (75) and, at this point, a spring



(80) is arranged involving the extension (78) and, at the same time, the top and bottom ends of said spring (80) are respectively supported between the branch (76) and a step/washer (81) existing in the bottom portion of said extension (78), thus configuring an appropriate springiness for actuating upwards the corresponding portion (76) of the rocker support (75), also this movement being guided by a pin (82) which passes vertically and freely through a distal hole existing in branch (76), wherein said pin, by means of the bottom end, is thrust into a vertical protrusion (83) that raises out of wall (9), while through the top end said pin includes a stopper head (84) for the branch (76) movement, so as to correctly raise and lower the bifurcated end (77) of support (75), where the movable contacts (85) are fixed, that, in the top portion, are interconnected with the electrical feeding wires (F), while in the bottom portion, they are aligned on the inverted "L" fixed contacts (63), the top ends of which are horizontal and coplanarly facing against each other, while the bottom end protrudes vertically downwards crossing said wall (9) to form (figure 16) two coupling terminals (64) for the resistor (25), the third terminal of which is represented by a third flexible laminar contact (65) that, through the rear end, similarly crosses the wall (9), while through the front end, it is positioned under an extension or tab (66) of one of the "L" contacts, such that said tab and the movable contacts (85) may selectively contact or not the fixed contacts (63) by means of a multiple-position switch (67) the configuration of which is the same of that of the previous constructive version, even in relation to its operation.

12) "ELECTRIC SHOWER", according to claim 11, characterized in that in another constructive variation, the same electrical actuation assembly defined by the rocker (75) and all its actuation details, including the switch (67), may be inversely mounted according to a 180° displacement in relation to the assembly central point (78).

