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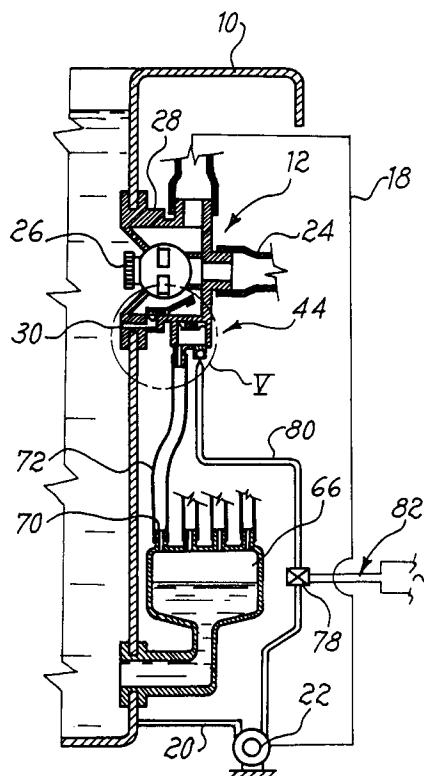
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(54) **Hydromassage nozzle.**

(57) A hydromassage nozzle, comprising a tubular body 14 applied through the wall 10 of a bath has a part 16 outside the bath connected to a circuit for recirculating water under pressure 20, 22, 18 and to an air suction duct 24. Its end 26 inside the bath forms the outlet mouth for water under pressure mixed with air. The nozzle comprises a duct 30 for discharging into the bath the stagnant water which remains in the nozzle at the end of hydromassage. A discharge valve 32 closes the duct 30 so as to prevent water flowing back into the bath into the nozzle and opens it at the end of hydromassage. The valve obturator is a rocker arm, the rotations of which are actuated by magnet means moved away from the rocker arm by resilient means in order to open the valve and brought into the vicinity thereof in order to close the valve by a pneumatic sensor 44 connected to an expansion reservoir 66 communicating with the interior of the bath. Means for sensing the presence of the magnet means 60 allow the activation of the water recirculation means only when a predetermined quantity of water is present inside the bath.

Fig. 2**EP 0 670 156 A1**

The present invention relates in general to the specific sector of hydromassage nozzles.

It is known how, over the years, the articles in question have been the subject of in-depth studies carried out by manufacturers in order to obtain products which are highly regarded both from the point of view of the quality of the hydromassage and in relation to the solution of the numerous problems posed, in order to obtain correct and reliable operation of the nozzles.

Although the first aspect has been carefully studied, particular attention has been devoted to the second aspect in an attempt to reduce as far as possible or even eliminate entirely drawbacks due, for example, to malfunctions or frequent maintenance of the nozzles.

A first considerable problem to be solved with regard to the use of hydromassage nozzles consists in the fact that they must be activated only when water is present in the bath since starting up the water circulating pumps when empty could cause irreparable damage thereof.

Another not insignificant problem to be solved is that of preventing water flowing back from the bath into the hydromassage water recirculation circuit through the nozzles during normal use of the bath for cleansing purposes only, which may cause the introduction, into said circuit, of aqueous solutions consisting of soaps or other detergents containing surfactants. The latter may give rise to serious problems involving the excessive formation of foam when hydromassage is resumed, including also problems of hygiene associated with the stagnation of these solutions in the water recirculation circuit.

The problem of water stagnation also occurs when a certain quantity of water remains inside the body of the nozzles during periods of inactivity of the same, stagnation which, in this case also, involves hygienic problems of a not insignificant nature.

It is known that the aforementioned problems have been resolved with solutions of various kinds which, although more or less reliable from an operational point of view, have proved to have a complex design and hence require frequent and delicate maintenance as well as difficult being difficult to regulate.

One of the most common drawbacks consists in the fact that, in the various solutions proposed, each of the aforementioned problems has been solved with individual appropriate means, each designed to perform a well-defined function different from that performed by the others, hence the reason for the complexity of the known apparatuses.

A typical example of a nozzle of this type is that which has formed the subject of Utility Model Application No. 22589 B/84 filed on 17 July 1984 in

the name of the same depositor of the present application. This nozzle is designed to prevent water from flowing back into its air-conveying sections as well as the stagnation of water in its outermost parts. However, said nozzle requires the manual shutting-off of the hydromassage water jets in order to prevent bath water flowing back into the water circulation system when the bath-tub is to be used for an ordinary bath.

This latter drawback is substantially eliminated by the solution proposed in Industrial Patent Application No. 22165 A/85 filed on 17 September 1985 which namely ensures said closure of the nozzles and of at least one suction valve so as to prevent soap water entering the hydromassage recirculation system, said closure being provided on said emission nozzles by an obturator kept normally closed by a spring and made to open by the formation of pressure in the hydromassage recirculation water and on said at least one normally closed suction valve which is opened by a hydraulic membrane actuator which performs opening of said valve following the formation of water pressure in the said recirculation circuit and hence in the hydraulic actuator.

The aforementioned solution, however, has the drawback of the considerable difficulty and complexity associated with hydraulic actuators operated by water pressure generated by the hydromassage recirculation pump. Furthermore, said solution makes the opening of at least one suction valve dependent upon the presence of pressure in the delivery pipe of the recirculation pump and consequently, with the use of normally closed obturators, requires a pressure supplied by the pump sufficient to overcome the springs which keep the said obturators closed, being thus unable to reduce the hydromassage pressure below a certain minimum value which may prove harmful for people of particularly delicate constitution who run the risk of damaged blood vessels caused by an excessively strong hydromassage action.

As regards solely the stagnation of water in the nozzles at the end of hydromassage, it is known that elimination of the water in the nozzles is performed via discharge ducts with which they are provided, as a result of opening of valves inserted in said ducts. It is known that, in traditional nozzles, opening of these valves is performed by means of a special command issued by the user via means of the electrical, electronic or similar type. It is obvious that a solution of this kind is not particularly reliable, being of an impromptu and fortuitous nature, since the user may forget to perform this important operation with all the negative consequences arising therefrom.

As regards, finally, the problem of achieving activation of the means which supply water under

pressure to the nozzles, i.e. issuing of the command for the start of hydromassage, only when there is an adequate amount of water inside the bath, no valid solution has yet been found for this problem.

A hydromassage nozzle has now been devised, forming the subject of the present invention, which has an extremely simple design owing to the fact that all the aforementioned problems are solved with a single component, activation of which enables all the drawbacks which may arise from the aforementioned problems to be overcome at the same time. The nozzle in question, therefore, in addition to being reliable from an operational point of view, is not affected by problems of maintenance which, however, in the rare instances where it is required, is easy to perform precisely on account of the simple design of the nozzle.

The present invention therefore relates to a hydromassage nozzle, in particular although not exclusively for baths, of the type comprising a tubular body designed to be applied through the wall of the said bath, its portion outside the bath being connected to a circuit for recirculation of water under pressure and to an air suction duct, while its end inside the bath forms the outlet mouth for water under pressure thoroughly mixed with the air supplied from the suction duct, the body of the nozzle having inside it at least one duct communicating with the interior of the bath for disposing inside the latter the stagnant water which remains inside the nozzle at the end of hydromassage, said duct being provided with a discharge valve which is closed in order to prevent water flowing back from the bath into the nozzle and opened at the end of hydromassage when the bath is practically drained of water so as to allow discharging of the stagnant water present inside the nozzle, said nozzle being characterized in that the obturator of the discharge valve is mounted on a rocker arm member, the rotations of which are actuated by displaceable magnet means which are kept at a distance from said rocker arm by the action of resilient means in order to keep the discharge valve open and brought into the vicinity of the same in order to close the valve by the action of a pneumatic sensor connected to an expansion reservoir communicating with the interior of the bath, said displacement occurring against the action of said resilient means when the bath is filled with a predetermined quantity of water, there being provided finally means for sensing the presence of said magnet means designed to allow activation of the means for recirculation of the water under pressure inside the nozzle when said predetermined quantity of water is present inside the bath.

The characteristic features as well as the advantages of the nozzle according to the present

invention will emerge clearly from the following detailed description of some of the embodiments thereof provided by way of non-limiting examples with reference to the accompanying drawings, in which:

Figure 1 is a diagrammatic longitudinal section through a nozzle according to the present invention in the rest condition;

Figure 2 is a diagrammatic longitudinal section through the nozzle of Figure 1 in the working condition;

Figure 3 is a diagrammatic longitudinal section through the nozzles of Figures 1 and 2 again in the rest condition substantially after hydromassage has been completed;

Figures 4 and 5 are views, on a larger scale, of the details indicated by IV and V in Figures 1 and 2, respectively, and

Figure 6 is a view, on a larger scale, of the same detail shown in Figures 4 and 5, but of a variation of embodiment of the nozzle according to the invention shown in the rest condition of the nozzle.

Reference is made, first of all, to Figures 1 to 3 and 4 and 5 in order to describe the first embodiment of the nozzle according to the present invention.

The nozzle in question is denoted in its entirety by 12 and is shown in an extremely schematic manner since it may consist of a conventional nozzle of any type. In this respect the nozzle will be briefly described solely for the sake of completeness as regards references and illustrative clarity.

Still with particular reference to Figures 1 to 3, the nozzle according to the invention is of the type comprising a tubular body 14 applied through the wall 10 of the bath having a portion outside and a portion inside the bath.

More particularly, its external portion 16 is connected in a known manner, via a duct 18 shown partially and schematically, to a circuit for recirculation of water under pressure which comprises, in addition to the duct 18, a further duct 20 connected to the interior of the bath which removes water from the latter by the action of a pump 22, to the inlet of which the duct 20 is connected, while the duct 18 is connected to its outlet. In this way, as can be seen in particular from Figure 2, the water present in the bath is removed from the latter and conveyed from the pump 22 to the nozzle 12. The portion 16 of the nozzle outside the bath is also connected, again in a conventional manner, to an air suction duct 24. No operating component is provided for the suction and introduction of air from/into the nozzle since, as in conventional nozzles, this operation is performed by a vacuum effect which is created inside the tubular duct 14

shaped internally in a known manner in the form of a Venturi tube. This vacuum is created by the transverse introduction, into the nozzle, of water under pressure.

The portion of the nozzle 12 inside the bath, denoted by 26, i.e. its end directed towards the interior of the bath, forms the outlet mouth for water under pressure thoroughly mixed with the air supplied from the suction duct 24.

The body of the nozzle, i.e. its part which surrounds the tubular duct 14, is denoted by 28 and, with reference now also to Figures 4 and 5, it can be noted that, in the bottom part of the body 28, there is formed a duct 30 which connects the interior of the body 28 of the nozzle to the interior of the bath.

The duct 30 has associated with it, inside the body 28 of the nozzle, a valve for closing and opening this duct denoted in its entirety, in Figures 4 and 5, by the reference number 32.

According to one of the most remarkable innovative features of the nozzle according to the present invention, the valve 32 is in the form of a rocker arm, i.e. consisting of an oscillating member. The essentially rod-shaped body 34 of the valve 32 is in fact pivotably hinged in its middle zone at 36 on the end wall of the body 28 of the nozzle.

As can be seen again more particularly from Figures 4 and 5, the two sides of the body 34 of the valve 32 with respect to the pivoting point 36 are slightly inclined with respect to each other for the reason which will be explained below.

One end of the body 34 of the valve 32, i.e. the left-hand end in Figures 4 and 5, has mounted on it the obturator 38 of the valve 32 which, when it is raised with respect to the inlet of the duct 30 as shown in Figure 4, leaves this duct open. When, however, the obturator 38 is lowered, it is applied to the inlet of the duct 30 in order to close it, as illustrated in Figure 5.

The other end of the body 34 of the 32, which is substantially L-shaped, has mounted on it a small block of magnetic material 40 with a substantially parallelepiped shape. The exposed face 42 of the magnetic block 40 has a polarity which is predetermined in the manner which will be specified below.

As can be noted from Figures 4 and 5, when the obturator 38 of the valve 32 is raised, the magnetic block 40 rests on the end wall of the body 28 of the nozzle, whereas when said obturator 38 closes the duct 30, i.e. is located in the lowered position, the block 40 is raised with respect to said end wall of the nozzle body 28.

Below the end wall of the body 28 of the nozzle, substantially opposite the portion of the lever 32 carrying the magnetic block 40, a pneu-

matic sensor is provided, denoted in its entirety by 44.

The pneumatic sensor 44 comprises essentially a sealed chamber 46 consisting substantially of a wall 48 which extends integrally with the end wall of the body 28 of the nozzle to which a closing cover 50 is fitted.

The chamber 46 has arranged inside it a resiliently deformable membrane 52, the contour of which is sealingly fixed between the edge of the cover 50 and that of the wall 48. Fixing may be performed in any known manner, for example force-fitting, snap-engagement or by applying locking means of any kind.

The central part 54 of the deformable membrane 52 is substantially flat and made of rigid material, for example plastic material. The top part of the flat part 54 has fixed to it a small plate 56, for example made of metallic material, from which there extends at the top a shaped lug 58 which is centrally hollow and inside which a block of magnetic material 60 is fixed. The exposed face 62 of the magnetic block 60 has a predetermined polarity and, in the embodiment considered now with reference to Figures 1 to 5, the polarity of the face 62 is the same as that of the face 42 of the magnetic block 40.

The membrane 52 and therefore the magnetic block 60 mounted on its central part 54 are able to assume a first operating position which is that illustrated in Figure 4 and a second operating position which is that shown in Figure 5, the purpose of which is explained hereinbelow.

In the first operating position the central part 54 of the membrane 52 is lowered, i.e. is located substantially at the bottom of the chamber 46, and this occurs owing to the action of a spring 64 arranged between the external face of the end wall of the body 28 of the nozzle and the plate 56 fixed to the central part 54 of the membrane 52. In this condition the magnetic block 40 is not affected by the magnetic field of the magnetic block 60 owing to the distance which exists between these blocks. It should be remembered among other things that the end wall of the body 28 of the nozzle must be made of a material which is pervious to the magnetic field, this in relation to the second operating condition as explained below.

In the first operating condition now described in detail, the magnetic block 40 rests on the end wall of the body 28 of the nozzle and the obturator 38 of the valve 32 is therefore raised so that the duct 30 is open. This condition corresponds to that shown in Figures 1 and 3, i.e. to the full rest condition of the nozzle with the bath completely drained of water, or to that shown in Figure 3 substantially after hydromassage has ended so that with the duct 30 open the stagnant water inside the

nozzle 12 can be discharged into the bath.

In the second operating condition the central part of the membrane 52 is raised with respect to the bottom of the chamber 26 and the magnet 60 comes into contact with the external face of the end wall of the body 28 of the nozzle. Since the polarity of the face 62 of the block 60 is the same as that of the face 42 of the block 40, a repulsive force is generated between said two faces which will cause raising of the block 40 and anti-clockwise rotation of the lever 32. Consequently, the obturator 38 assumes the lowered position, closing the duct 30. Raising of the central part 54 of the membrane 52 is performed by means described below opposing the action of the spring 64 which is therefore compressed.

The operating condition now described with reference to Figure 5 corresponds to that of Figure 2, i.e. with the bath completely full of water and the nozzle 12 activated for performing hydromassage. Obviously this condition is also applicable to the case where the nozzle is closed and the water inside the bath is used for a cleansing bath without hydromassage since in this case also the water present inside the bath must not flow into the nozzle.

The means which cause raising of the deformable membrane 52 and allow lowering thereof by the spring 64 comprise, with particular reference now to Figures 1 to 3, an expansion reservoir 66 arranged in the bottom part of the bath or in any case below the nozzle 12, which reservoir is connected, via its duct 68, to the interior of the bath. In this way, as can be seen from Figure 2, when water is introduced into the bath, owing to the principle of communicating containers, it is also introduced inside the expansion reservoir 66 up to a predetermined level.

As can be seen in particular from Figures 1 to 3, the upper side of the reservoir 66 is provided with a series of tubular portions 70 to each of which the end of a pipe 72 is sealingly connected. The other end of each of the pipes 72 is connected, again in a sealed manner, to a tubular portion 74 provided on the bottom of the chamber 46 of the pneumatic sensor 44. It is obvious that as many pipes 72 will be provided as there are nozzles, even though in Figures 1 to 5 this pipe 72 has been shown connected to the single nozzle illustrated.

The configuration now described is therefore such that, when water enters into the expansion reservoir 66 as shown in Figure 2, the reservoir 66 is filled partially with water and the air which is located above the free surface of the water contained in the reservoir 66 is compressed. This compressive action is such that it causes raising of the membrane 52 with compression of the spring

64. The two magnets 60 and 40 move towards each other and, as explained above, they repel each other so that the duct 30 of the nozzle 28 is closed. Obviously the resilience factor of the spring 64 will be suitably chosen so that the compressive action due to the entry of water into the reservoir 66 generates a pressure sufficient to cause compression of the spring 64.

Vice versa, when, as can be seen in particular in Figure 3, the bath has no water inside it, the expansion reservoir 66 also gradually empties and said pressure of the air contained in it and inside the pipes 72 is no longer exerted so that, owing to the action of the spring 64, the pneumatic sensor 44 is brought into the initial position shown in Figure 4.

It is also obvious that the various constructional parameters of the means now described will have values such as to allow restoration of the operating condition, shown in Figure 4, of the pneumatic sensor 44 only when the level of the water inside the bath has risen to below the outlet end of the discharge duct 30 of the nozzle 12, this obviously in order to prevent water flowing back inside the nozzle, i.e. both water used for hydromassage and water containing cleaning substances used for a normal bath.

According to a further particularly important innovative feature of the nozzle according to the present invention, the pneumatic sensor 44 has associated with it means for sensing the presence of magnet means designed to allow activation of the means for recirculation of water under pressure into the bath only when said bath is filled with a predetermined quantity of water as is explained more fully hereinbelow.

In the simplified embodiment considered, these sensor means consist of a dry-reed switch denoted by the reference number 76, known per se and therefore not illustrated in detail, which is designed to remain inactive in the operating condition shown in Figure 4, while it is activated in the operating condition shown in Figure 5.

More precisely the sensor 76 is connected to a known consent circuit 78 via a connection 80, this consent circuit 78 receiving, via a connection 82, the electrical mains voltage.

When the sensor 76 is in the condition shown in Figure 4, as explained further above, it is inactive and therefore deactivates the consent circuit 78 which prevents energization of the pump 22 with the mains voltage. When however, the sensor 76 is in the operating condition shown in Figure 5, i.e. with the magnetic block 60 raised, the sensor 76 no longer detects the presence thereof. It is thus activated, sending a suitable signal to the consent circuit 78, also known and therefore not described in detail, which enables energization of

the pump 22 with the mains voltage. In this way the user is able to start hydromassage, being certain that or in any case not having to bother to check whether there is water present in the bath. This device is undoubtedly of great interest since activation of hydromassage only occurs when there is water inside the bath, thus preventing damage to the pump 22 as might happen with water recirculation circuits of the conventional type.

It is obvious that the configuration of the valve 32 as a rocker arm or first-class lever, with the fulcrum positioned between the power (magnetic block 40) and the resistance (obturator 38) must not be regarded as limiting, but only exemplary in nature. In this connection an obvious variant, altogether strictly equivalent, is that shown in Figure 6 which represents substantially a simplified embodiment of the former.

In the Figures now considered, the parts which are the same as those of the previous Figures have been denoted by the same reference numbers and, therefore, these parts are not described now. It can be noted, however, that the magnetic block 40 has been eliminated and the body 34 of the valve is substantially straight and pivotably mounted on the body 28 of the nozzle 12 at the opposite end to that where the obturator 38 is provided. In this case the valve 32 is formed as a second-class lever in which the fulcrum is at one end.

In the embodiment considered the body 34 of the valve 32 is kept in the raised position, i.e. with the duct 30 open since the obturator 38 is raised with respect to the inlet thereof, by a spring 84 connected at one end to said body 34 and at the other end to a fixed pivot 86 on the body 28 of the nozzle 12. The spring 84 keeps said body 34 against a stop 88 in the raised position. As for the rest, operation of the assembly described now is substantially identical to that of the previous embodiment, taking into account obviously the fact that the body 34 of the valve 32 must be made of ferromagnetic material.

A further variant, again obvious and strictly equivalent to the preceding ones, may obviously be that of designing the valve 32 as a third-class lever in which the fulcrum is always at one end, but a magnet (power) is provided substantially in the centre and the obturator (resistance) at the other end. In this embodiment obviously the opposing faces of the magnets will have opposite polarities.

The last embodiment considered can be easily deduced from the preceding ones and is therefore neither illustrated nor described in detail. Operation of the nozzle according to the present is already substantially clear from the description given above, in which the main points have been highlighted. It is worth, however, summarising below the main situations which may occur in this con-

nection, should the user wish to simply take a bath with cleaning substances and without hydromassaging or, instead, intends to have a hydromassage.

The initial condition is always that shown in Figure 1 where the bath does not contain water and is then filled so as to achieve the condition shown in Figure 2. The water poured into the bath partially fills the expansion reservoir 66 which, via pressurisation of the pipes 72, causes stretching of the resilient membrane 52 with consequent raising of the magnetic block 60. When the latter comes into the vicinity of the valve 32, the latter is made to rotate in an anti-clockwise direction so that the ducts 30 of the nozzles are closed by the associated obturators 38.

If the user intends to take a bath simply for cleansing purposes, he takes the necessary steps without causing energization of the pump 22 which, however, could be started up by the signal sent by the sensor 76.

It is important to note that, in this situation, owing to closing of the ducts 30, the water containing the detergent substances does not enter the nozzles, therefore avoiding the risk of damaging them.

When bathing has been completed, the bath is gradually drained until the condition shown in Figure 3 is achieved and then until it is completely empty, while emptying of the expansion reservoir 66 results in elimination of the pressure inside the pipes 72 and consequent resetting of the pneumatic sensors 44 into the condition shown in Figure 4 where the movement of the magnetic block 62 away from the magnetic block 40 allows the valve 32 to be brought into the position for opening of the ducts 30 as shown in Figure 4.

In the case where the user wishes to have a hydromassage, the initial condition is always that shown in Figure 1, following which one passes to the condition shown in Figure 2 where, with the same procedures described above, the various valves 32 of the nozzles 12 are closed and the movement of the magnetic block 60 away from the sensor 76 allows the latter to send an activation signal to the consent circuit 78. In this situation the user may operate the component which activates hydromassage so that the mains supply voltage energizes the pump 22 via the circuit 78. In this case the water is removed, via the ducts 20, from the bath and conveyed, via the pipes 18, to the various nozzles which thus start to function.

When the hydromassage has finished, the bath is gradually drained until the condition shown in Figure 3 is achieved and then completely emptied such that the expansion reservoir 66 also gradually empties, eliminating the pressure inside the pipes 72 and thus allowing, as described above, opening

of the various valves 32 and hence the discharge ducts 30. The stagnant water which remains inside the nozzles, in particular in the body 28 thereof and in the pipes 18, can therefore be freely discharged into the bath and disposed of.

Operation of the nozzle according to the present invention as described above is obviously also applicable to the variants which have been modified, compared to the variant shown in Figures 1 to 5, only as regards the configuration of the valve 32.

In addition to the considerable advantages - already mentioned above - of the nozzle according to the present invention, there are also other not insignificant advantages which complete and add to the features of reliability and constructional simplicity of the said nozzle.

Another not insignificant advantage consists in the fact that operation of the valve 32 is performed by magnetic means and hence without the need for providing suitable components inserted in holes which would have to be sealed together with all the associated problems.

Another also not insignificant advantage consists in the fact that the magnet means on their own simultaneously cause opening and closing of the various valves of the nozzles and also provide, via the sensor 76, the consent for start of hydromassage.

The function of these magnet means is therefore twofold.

It is obvious, finally, that conceptually and structurally equivalent variations and/or modifications may be made to the nozzle according to the present invention, without thereby departing from the protective scope thereof.

Claims

1. Hydromassage nozzle, in particular although not exclusively for baths, of the type comprising a tubular body 14 designed to be applied through the wall 10 of the said bath, its portion 16 outside the bath being connected to a circuit for recirculation of water under pressure 20, 22, 18 and to an air suction duct 24, while its end 26 inside the bath forms the outlet mouth for water under pressure thoroughly mixed with the air supplied from the suction duct 24, the body 28 of the nozzle 12 having inside it at least one duct 30 communicating with the interior of the bath for disposing inside the latter the stagnant water which remains inside the nozzle 12 at the end of hydromassage, said duct 30 being provided with a discharge valve 32 which is closed in order to prevent water flowing back from the bath into the nozzle 12 and opened at the end of

hydromassage when the bath is practically drained of water so as to allow discharging of the stagnant water present inside the nozzle 12, said nozzle 12 being characterized in that the obturator 38 of the discharge valve 32 is mounted on a rocker arm member 34, the rotations of which are actuated by displaceable magnet means 60 which are kept at a distance from said rocker arm 34 by the action of resilient means 64 in order to keep the discharge valve 32 open and brought into the vicinity thereof in order to close the valve 32 by the action of a pneumatic sensor 44 connected to an expansion reservoir 66 communicating with the interior of the bath, said displacement occurring against the action of said resilient means 64 when the bath is filled with a predetermined quantity of water, there being provided finally means 76 for sensing the presence of said magnet means 60 designed to allow activation of the means for recirculation of the water under pressure 22 inside the nozzle 12 only when said predetermined quantity of water is present inside the bath.

2. Hydromassage nozzle according to Claim 1, characterized in that the valve 32 is arranged inside the body 28 of the nozzle, while the magnet means 60 which cause the rotations of the rocker arm 34 of the spring are arranged outside the body 28 of the nozzle and inside a sealed chamber 46 adjacent to the body 28 of the nozzle in the zone where the valve 32 is positioned.
3. Hydromassage nozzle according to Claim 1, characterized in that said rocker arm member 34 of the valve 32 consists of a substantially rod-shaped body hinged on a pivot 36 of the body 28 of the nozzle at the end of which the obturator 38 of the valve 32 is provided, while at the other end a magnetic block 40 is provided, being designed to cooperate with said magnet means 60.
4. Hydromassage nozzle according to Claim 3, characterized in that said substantially rod-shaped body of the rocker arm 34 of the valve 32 has the portion to which the obturator 38 is fixed inclined with respect to the portion which carries the magnetic block 40.
5. Hydromassage nozzle according to Claim 3, characterized in that the opposing faces of the magnet means 60 and the magnetic block 40 have the same polarity.

6. Hydromassage nozzle according to Claim 6, characterized in that the wall 42 of the body 28 of the nozzle 12 which separates the magnet means 60 from the magnet block 60 is pervious to the magnetic field. 5
7. Hydromassage nozzle according to Claim 5, characterized in that said pneumatic sensor 44 comprises a resiliently deformable membrane 52, the contour of which is fixed, perimetally sealed, to the inside wall of the chamber 46, said membrane 52 having a flat central portion 54 made of substantially rigid material above which there is provided a metal plate 56 with a lug 64 inside which said magnet means 60 consisting of a magnetic block are formed. 10 15
8. Hydromassage nozzle according to Claims 3 and 8, characterized in that the resilient means which keep the magnet means 60 at a distance from the magnetic block 40 consist of a spring 64, arranged inside the chamber 46, which is engaged at one end with a wall of the chamber 46 and, at the other end, with the plate 56 of the deformable membrane 52. 20 25
9. Hydromassage nozzle according to Claims 1 and 2, characterized in that the chamber 46 is sealingly connected via a pipe 72 to said expansion reservoir 66. 30
10. Hydromassage nozzle according to Claims 1 and 2, characterized in that said means for sensing the presence of said magnet means 60 consist of a magnetic switch 76 arranged in the vicinity of the end wall of the chamber 46 and connected via a connection 80 to a consent circuit 78 activating the pump 22 for recirculation of water under pressure. 35 40
11. Hydromassage nozzle according to Claim 10, characterized in that said magnetic switch is a dry-reed type switch. 45
12. Hydromassage nozzle according to Claim 1, characterized in that the rocker arm 34 of the valve 32 consists of an essentially rod-shaped and straight member pivotably mounted at one end on the body 28 of the nozzle, while the obturator 38 of the valve 32 is provided at its other end, said rocker arm 34 being kept in the position for opening the valve 32 by resilient means 84 which connect said rocker arm 34 to a pivot 86 of the body 28 of the nozzle 12 and keep it up against a stop 88 thereof. 50 55
13. Hydromassage nozzle according to Claim 12, characterized in that said essentially rod-shaped and straight rocker arm 34 is made of ferromagnetic material.
14. Hydromassage nozzle according to Claim 1, characterized in that said rocker arm 34 of the valve 32 consists of an essentially rod-shaped and straight body pivotably mounted at one end on the body 28 of the nozzle 12 while in a magnetic block cooperating with said magnet means 60 is applied to its middle zone, the obturator 38 of the valve 32 being provided finally at its other end.
15. Hydromassage nozzle according to Claim 14, characterized in that the opposing faces of the magnet provided on the rocker arm 34 of the valve 32 and of the magnet means 60 have opposite polarities.

Fig. 3

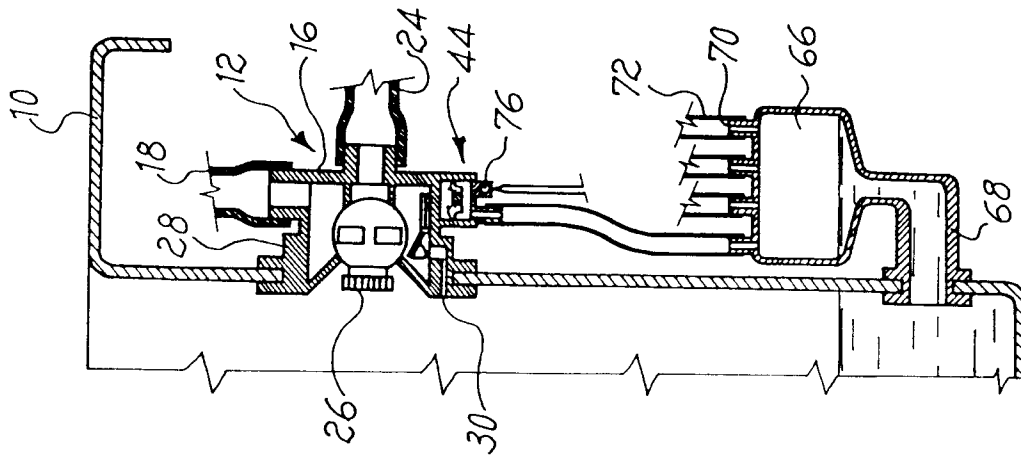


Fig. 2

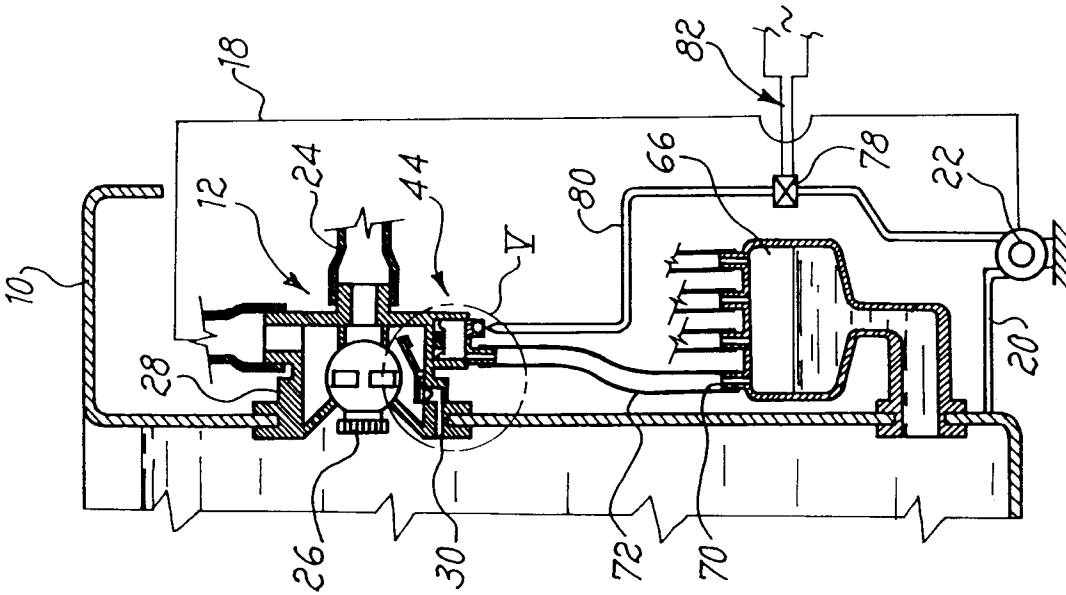
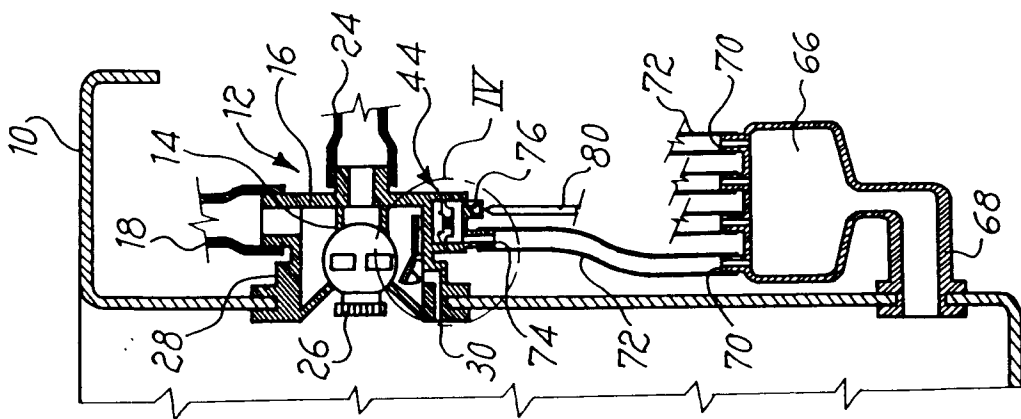
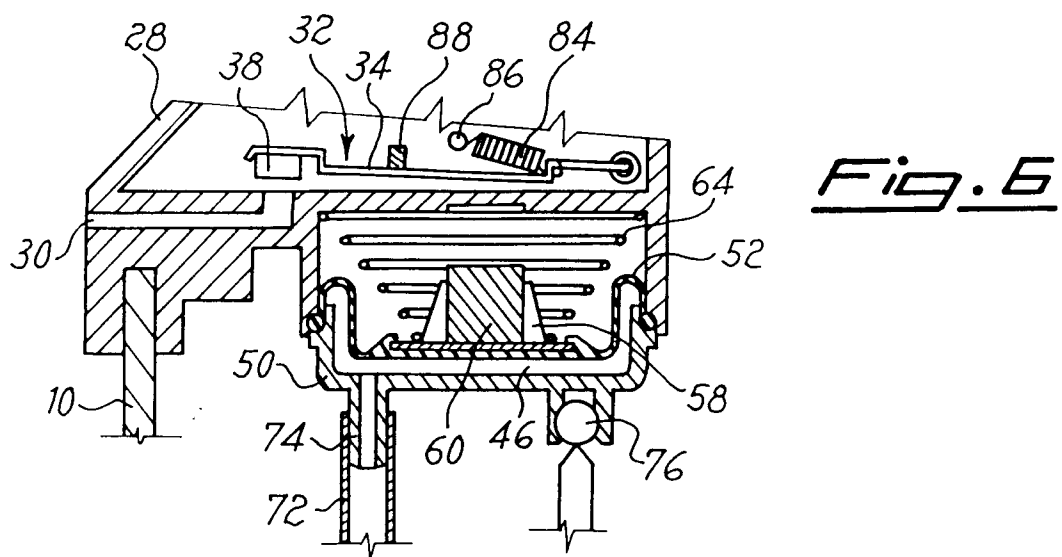
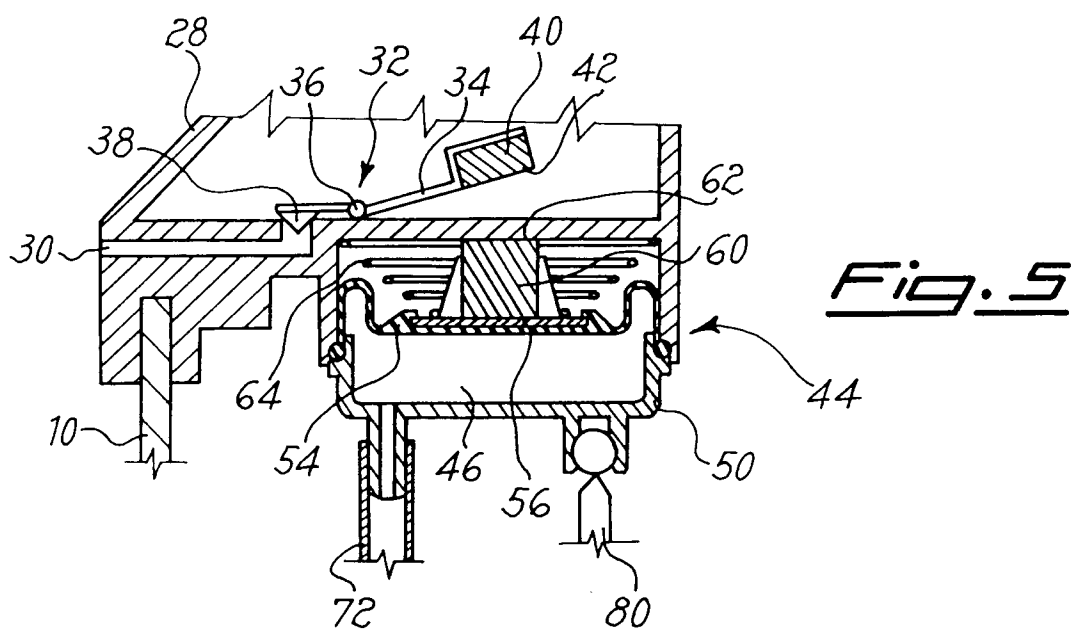
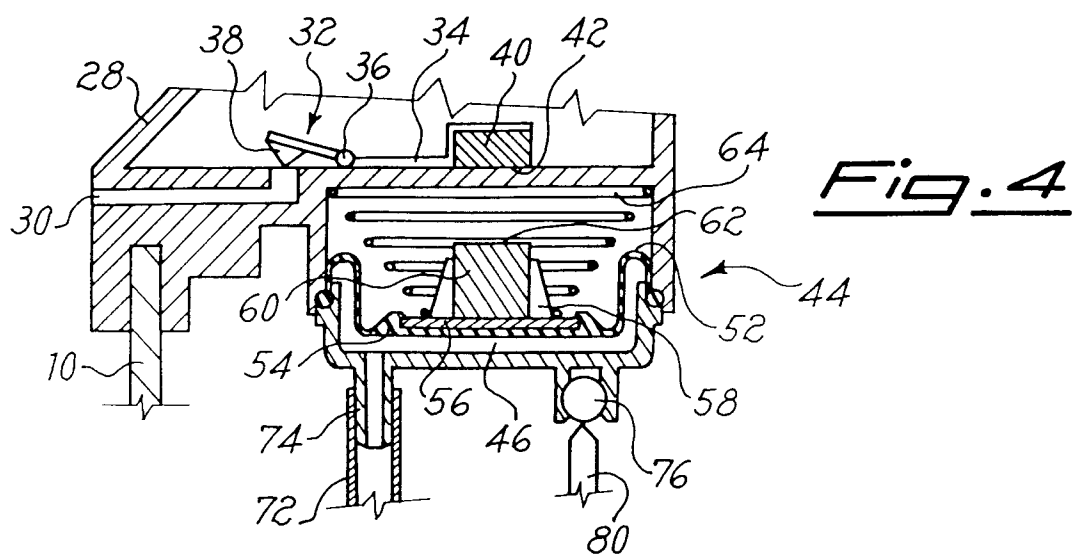


Fig. 1







European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 95 20 0493

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
D,A	EP-A-0 215 514 (TEUCO GUZZINI SRL) 25 March 1987 * abstract; figures 3-5 * ---	1	A61H33/02
A,D	EP-A-0 168 823 (JACUZZI EUROP) 22 January 1986 * abstract; figures 1-3 * ---	1	
A	EP-A-0 119 581 (VIEGENER II FA FRANZ) 26 September 1984 * page 5, line 21 - line 24; figures * -----	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			A61H
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 13 June 1995	Examiner Jones, T
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			