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(54) **Hydromassage bath with a rotating distributor**

Hydromassagegewanne mit Rotationsverteiler

Baignoire d'hydromassage avec distributeur rotatif

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(56) References cited:
**EP-A- 0 154 935**
**EP-A- 0 286 304**
**DE-B- 1 087 761**
**FR-A- 2 364 026**
**FR-A- 2 398 851**
**FR-A- 2 610 519**

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## Description

**[0001]** The present invention relates to bathtubs for hydromassage in general and more particularly to bathtubs provided with means for hydromassaging the back.

**[0002]** Hydromassage of the abovementioned type differs from that carried out. on other parts of the body on account of the special way in which it is achieved. In fact, whereas with hydromassage in general all the supply vents or nozzles function simultaneously, in the case of hydromassaging of the back the nozzles in question, which are aligned longitudinally in at least one series along the backrest of the bathtub, must be activated in a predetermined sequence. More precisely, they are supplied in succession in one direction (from the bottom upwards) or in the opposite direction. After the desired sequence has been chosen, it is repeated cyclically for a predetermined period of time, depending on the effects which are to be obtained.

**[0003]** The nozzle activation cycle, as described here, can be explained in that the action of this type of hydromassage reproduces the action of a traditional manual massage performed by Shiatzu masseurs or physiotherapists. It is sufficient to mention just one of the advantages offered by this type of hydromassage, i.e. the significant reduction in cost, to understand the huge success of bathtubs which can be used for this purpose and the consequent research efforts by manufacturers to achieve reliable and competitive technical solutions.

**[0004]** Bathtubs which allow the user to undergo hydromassaging of the back are in fact known and it is also known that generally they are provided with suitable programming means for activating and supplying the vents or nozzles delivering the liquid under pressure, as described above. These programming means, which are for example of the electronic type in the more sophisticated models of bath, control sequential opening and closing of solenoid valves inserted in the supply ducts of the various nozzles.

**[0005]** These tubs, however, while achieving satisfactory results in terms of performance, are delicate and difficult to maintain, precisely on account of the frequently used components which are subject to wear. In fact, these components operate in a damp environment and therefore require frequent maintenance. From an economic point of view, therefore, they are not convenient to use.

**[0006]** Mention should also be made of the frequent interruptions in operation, arising for the same reasons referred to above, which cause the user a considerable amount of inconveniences.

**[0007]** EP-A-0 154 935 discloses a kind of hydromassage device for physiotherapy comprising a tank or tub and provided with two kinds of jet assemblies : a first one mounted on a means for intermittently dispensing pressurized fluid consisting of a reciprocating element accomodating a first plurality of nozzles delivering fluid under pressure and a scond one, consisting of a plurality of axially aligned nozzles, located in the backrest of the tub and activated in succession from the bottom towards the top and vice versa.

**[0008]** A bathtub for hydromassaging the back which eliminates all the drawbacks of conventional bathtubs has now been devised and constitutes the subject of the present invention.

**[0009]** A bath tub according to the appended claim 1 is more specifically the subject of the present invention.

**[0010]** A bathtub for underwater massage with water jets having a water supplying apparatus composed of stationary and movable members is known from DE-B-1087761. Said apparatus is a rotatable water delivery-ing assembly since its movable member is rotatable within the stationary member. More particularly both said rotatable and stationary members consist of a tubular pipe.

**[0011]** The water under pressure is introduced into the rotatable pipe which is provided with series of holes which are angularly offset in the longitudinal direction and are designed to be positioned, as a result of rotation of said pipe, opposite a corresponding series of holes of the stationary pipe, these holes having a rectilinear pattern.

**[0012]** By this apparatus the sequential supplying with water of the holes of the stationary member in one direction or in the contrary one is not obtainable as in the present invention.

**[0013]** On the contrary, when the internal duct is caused to rotate and the water is introduced in it, all the holes of the stationary duct are simultaneously fed with water which is supplied into the bathtub.

**[0014]** The typical way of carrying out the hydromassaging of the back is not achieved by the above-mentioned apparatus of the prior art.

**[0015]** According to another remarkable feature of the bathtub of the present invention, its distributor of water therein is a rotating distributor by which the sequential feeding of the nozzles is achieved.

**[0016]** From EP-A-286304 is known a bath installation using a rotary sequency distributor for supplying in turn with a fluid successive groups of openings distributed in different zones of the bottom and walls of the bathtub.

**[0017]** According to another important feature of the bathtub according to the present invention means are provided at the outlet of said distributor for the automatic discharging of the residual liquid from the latter when hydromassage has been terminated. Said discharging means are activated, i.e. opened, when a sensor of the liquid level detects a minimum level of liquid in the bathtub sending a suitable signal to a valve means inserted in a duct connecting the outlet of the distributor with the bathtub waste outlet.

**[0018]** In FR-A-2398851 a distribution apparatus of water is described the configuration of their feeding ducts being that these latter allow to obtain the discharging of the water from the apparatus when its use is ter-

minated. According to the main feature of this apparatus the discharging of the water is simply obtained by gravity since all the various water feeding ducts are inclined towards the bottom in the direction of a discharging device which is the lowest part of the apparatus.

**[0019]** This way of discharging the water is clearly casual and not reliable since there is not the certainty that the discharging device is completely empty. In fact no sensor of the level of liquid is provided as it is the case of the present invention nor any other similar control means.

**[0020]** The characteristics and advantages of the bathtub according to the present invention will emerge more clearly from the following detailed description of one example of embodiment thereof, provided with reference to the accompanying figures in which:

Figure 1 is an overall schematic perspective view of the bathtub according to the invention;
Figure 2 is a view in overall longitudinal section of a preferred embodiment of a rotating distributor which performs hydromassaging of the back; .
Figure 3 is a plan view of the distributor according to Figure 2;
Figure 4 is a view of said distributor along the section IV-IV of Figure 3;
Figure 5 is a side view, partially cut-away, of a supply duct of the rotating distributor according to Figure 2;
Figure 6 illustrates a series of cross-sections (from B to I) of the duct according to Figure 5;
Figure 7 illustrates schematically application of the rotating distributor according to Figure 2 to the backrest of the bath.

**[0021]** With reference first of all to Figures 1 to 6, a description will now be given, by way of a non-limiting example, of the first embodiment of the bathtub according to the invention.

**[0022]** Only the backrest portion of the tub is shown since it is the only part which is of interest for the purposes of understanding the present invention. The remainder of the bathtub, whilst being provided with other devices for hydromassaging, is not shown since it is known per se.

**[0023]** The backrest, denoted overall by 10, has two series of vents or nozzles 12 for delivering a liquid under pressure, such as water for example.

**[0024]** The nozzles 12 of each of the two series are aligned in a direction substantially parallel to the longitudinal median axis of the backrest 10 and the two series of nozzles 12 are parallel to each other and are composed of an equal number of nozzles 12 which are equidistant with. respect to each other.

**[0025]** More precisely the nozzles 12 of each series are mounted in pairs, as described in more detail below, on the upper side, i.e. on the side where the backrest 10 of the bath is located, of chambers 14 formed longitudinally in two parallel and symmetrical rows with respect to a composite central longitudinal duct 16 on two tubular portions denoted overall by 18a and 18b, respectively. As can be noted in particular from the cross-section of the assembly described here, the external wall 16a of the duct 16 and the portions 18a, 18b are formed as one piece.

**[0026]** Advantageously, therefore, this assembly may be made of plastic and hence be obtained simply by means of moulding with a significant reduction in costs.

**[0027]** It can also be appreciated from the longitudinal section described above that, with the same moulding operation, the chambers 14 of each row are separated from each other since, between each pair of nozzles 12, the walls of the tubular portions 18a and 18b are folded back in a U-shape against one other on the three sides which extend from the central duct 16, thereby defining and separating between them the chambers 14 of each row.

**[0028]** The chambers 14 which are located opposite one another symmetrically with respect to the composite central duct 16 may, however, assume two different and separate operating conditions.. They may, in fact, be respectively separated from one another or in communication with one another depending on the configuration assumed by the composite central duct 16 which, as will be explained below, performs the important function of a rotating distributor. In the second position, in particular, the chambers 14 in question are supplied simultaneously with liquid under pressure by the composite central duct or rotating distributor 16, supplying in turn the two pairs of nozzles 12 associated with them.

**[0029]** It is obvious that, instead of a pair of nozzles 12 for each chamber 14, only one or more than two of them could be provided, these being variations strictly equivalent to the embodiment illustrated and described herein by way of example.

**[0030]** The composite central duct or rotating distributor 16 comprises, within said external wall 16a, an essentially cylindrical sleeve 20, the ends of which are arranged in a fixed position in suitable seats provided at the ends of the tubular portions 18a, 18b.

**[0031]** The sleeve 20 is open at the ends, into one of which the liquid under pressure coming from a known supply pump 27 connected inside the bath via a duct 29 is introduced.

**[0032]** The sleeve 20, at the other end, is connected to a duct 21 connected in turn to the waste outlet of the tub. The duct 21 has inside it a solenoid valve 23 which is connected to a suitable electronic sensor 25 for detecting the level of the liquid inside the bathtub, indicated by a broken line in the illustration, said sensor being fixed in any known manner on one of the external walls of the tub, for example the rear wall as shown in Figure 1. This sensor 25, known per se, is calibrated so as to emit a control signal for opening the solenoid valve 23 when the level of water inside the tub, during its emptying at the end of the hydromassage, has reached a pre-

determined minimum value. This value, for example, corresponds substantially to the height at which the lower delivery nozzles 12 are located with respect to the bottom of the bathtub.

**[0033]** The means described above, which allow the rotating distributor to be emptied entirely, prevent stagnation of the liquid in the said distributor, which is particularly damaging if the tub is not used for a long period of time.

**[0034]** At the inlet to the chambers 14, the sleeve 20 is provided with openings 22 (Figure 4) which allow the liquid under pressure to flow inside said chambers. According to one of the particularly advantageous features of the bathtub according to the invention, by means of a suitable supply duct 24 arranged inside the sleeve 20, the liquid under pressure is introduced in succession into each pair of chambers 14 located opposite one another, i.e. in communication with each other as described above, in one direction or in the opposite direction.

**[0035]** The abovementioned supply duct 24, which can be seen more clearly in Figures 5 and 6, formed by a tubular body of a length substantially equal to that of the external sleeve 20 on which there is formed a plurality of holes 28 which are suitably offset with respect to one another and which allow the chambers 14 to be supplied in sequence with liquid under pressure, as explained above.

**[0036]** More precisely, the holes 28 are grouped together, in the example of embodiment considered, in fours on portions 26 of equal length of the duct 24. The four holes 28 of each portion 26 are arranged in pairs in a diametral plane, i.e. are arranged at 180°, while the holes of each portion 26 with respect to the preceding portion are offset at a predefined and constant angle, generally an acute angle. In this way the holes 28 are distributed over the duct 24 substantially in two helices.

**[0037]** In this situation it is obvious that, by rotating the duct 24, the holes 28 will gradually be positioned in succession opposite the openings 22 of the sleeve 20, thus allowing the liquid under pressure to pass correspondingly from a pair of opposite chambers 14 to the next pair, and so on as far as the last pair, thus supplying all the nozzles 12. The order in which these latter are activated depends on the direction of rotation of the duct 24 and, in order to obtain the supply sequence mentioned earlier, it is sufficient to rotate said duct in one direction or the other.

**[0038]** The conditions in which the hydromassage is performed may be varied according to the user's needs and requirements. For example, increasing or reducing the speed of rotation of the duct 24 causes, respectively, a reduction or increase in the duration of the supply sequence of the nozzles 12.

**[0039]** The force of the jets emerging from the nozzles 12 may be varied for example by modifying the delivery of the liquid supply pump and this in particular enables one to increase or decrease the pressure with which the jets of said liquid reach the user's body.

**[0040]** According to a further advantageous feature of the invention, the assembly consisting of the composite central longitudinal duct 16 and the two tubular portions 18a and 18b is fixed to the rear wall of the backrest 10. A description is now given, by way of a non-limiting example, of a possible embodiment of this fixing system. The abovementioned assembly is first of all simply rested on the rear surface of the said backrest 10 of the tub, inside a suitable seat in the latter.

**[0041]** Then the nozzles 12 are applied and fixed, through holes in said backrest 10, to the tubular portions 18a, 18b, thus fixing in this way the entire assembly to the bathtub.

**[0042]** In the example of embodiment considered, as can be seen more clearly in Figures 2 and 4, the walls of the tubular portions 18a, 18b to which the nozzles 12 are applied, are provided with sleeve elements 30 of essentially cylindrical shape, the middle zone of which is sealingly fixed in any known manner to said walls.

**[0043]** The portions 30a of the sleeve elements 30 which project outside the chambers 14 are threaded internally so that a corresponding threaded portion of the body of the nozzles 12 allows the latter to be screwed inside them. The top end of the body of the nozzles 12, i.e. the end arranged inside the tub, has an annular projection 12a which engages with the inner side of the backrest 10, thereby providing the abovementioned fixing system since the end of the portions 30a of the sleeves 30 engages with the external surface of the backrest 10.

**[0044]** On the end of the body of the nozzles 12 opposite to the preceding end there are formed annular grooves, two in the example considered, inside each of which a seal 32 is mounted, said seal being provided so as to ensure a sealing action when the abovementioned end of the nozzles 12 is inserted into the portion 30b of the sleeve elements 30 which is located inside the chambers 14. The reason why two, or in somes cases more than two, seals 32 are provided is in order to ensure the sealing action in all circumstances, namely engagement of at least one seal 32 in said portion 30b of the sleeves 30, independently of the wall thickness of the backrest 10, which may vary from one bathtub to another.

**[0045]** It should obviously be remembered that the provision of holes 28 on the duct 24 must be regarded solely as an example of embodiment since the same effects could be obtained by providing said duct with longitudinal eyelets, each of which would replace a pair of holes 28, while, as regards the rest, these eyelets would be arranged, from one portion 26 to the next, offset in the same manner as the holes in question.

**[0046]** The above description clearly illustrates the advantages of the bathtub according to the present invention.

**[0047]** By providing the rotating distributor for carrying out the hydromassage of the back, the tub is simplified

and the cost thereof reduced. In fact, the abovementioned distributor has made it possible to eliminate, or at least has entirely replaced, all the complex programming means provided in conventional bathtubs.

**[0048]** The need for maintenance and the interruptions in operation have therefore been reduced to a minimum, if not eliminated, thereby making the bath particularly reliable.

**[0049]** It is obvious, finally, that conceptually and structurally equivalent changes and/or modifications may be made to the bathtub according to the present invention without thereby departing from the scope of the appended claims.

## Claims

**1.** A bath tub for hydromassage having a device for the hydromassage of the back of the user, comprising at least one series of nozzles (12) for delivering a liquid under pressure, each series of nozzles (12) being at least approximately parallel to the median axis of the backrest wall (10) of the tub, and a distributor adapted to feed - according to a predetermined sequence repeated cyclically for a predetermined period of time - the nozzles (12) with the liquid delivered by a supply source (27), the said distributor comprising :

- a first stationary member (20) which is connected to said source (27) and provided with openings (22) suitable to allow the liquid under pressure to flow from the the source (27) to the said nozzles (12) and
- a second member (24) which is arranged inside the said first member (20) and rotatably movable with respect to the same, the said second member being provided with a plurality of holes (28), whereby the rotating movement of the second member (24) with respect to the first member (20) causes the holes (28) provided in the second member to come into and out of alignment with the openings (22) provided in the first member (20), **characterized in that**:
  - said distributor also comprises a duct or case (16) surrounding the said first member (20) and a plurality of chambers (14) on which the nozzles (12) are mounted in communication therewith,
  - and **in that** the arrangement of the holes (28) provided in the said second member (24) is such that the rotation of the latter with respect to the said first member (20) causes the liquid under pressure to be introduced in succession into the various chambers (14) when the same holes (28) are aligned with the corresponding openings (22) provided in the first member (20) so as to obtain a sequence of liquid jets emerging from the nozzles (12).

**2.** A bath tub for hydromassage according to claim 1, **characterized in that** the said chambers (14) are formed longitudinally in two parallel rows separated from one another on diametrally opposed tubular portions (18a, 18b) which are preferably formed as a one piece assembly with the external wall (16a) of the said duct or case (16).

**3.** A bath tub for hydromassage according to claim 1 or 2, **characterized in that** said second member (24) is formed by a tubular body on which the holes (28) provided therein are offset with respect to one another.

**4.** A bath tub for hydromassage according to claim 3, **characterized in that** said second member (24) consists of a plurality of portions (26), preferably of an equal length, on which the holes (28) are arranged diametrally opposed in at least one pair, the holes (28) of each of the said portions (26) being offset at a preferred and constant angle, generally an acute angle.

**5.** A bath tub for hydromassage according to any of the preceding claims, **characterized in that** each series of nozzles (12) is composed of an equal number of nozzles which are equidistant with respect to each other.

**6.** A bath tub for hydromassage according to any of the preceding claims, **characterized in that** each nozzle (12) is fixed to the associated chamber (14) by means of a sleeve element (30) provided on the same and comunicating therewith.

**7.** A bath tub for hydromassage according to claim 6, **characterized in that** the said sleeve element (30), which is of essentially cylindrical shape, consists of a first portion (30a) projecting outside the chamber (14) for a threaded connection with a corresponding portion of the nozzle (12) and a second portion (30b) inside the chamber (14) for a sealed connection with another corresponding portion of the same nozzle (12).

**8.** A bath tub for hydromassage according to any claim 2 to 7, **characterized in that** the assembly consisting of the said duct or case (16) and the said tubular portions (18a, 18b) is mounted and fixed externally to the rear wall of the backrest wall (10) so as to be fixed to the end of the nozzles (12) projecting from the external surface of the tub.

**9.** A bath tub for hydromassage according to claim 7

or 8, **characterized in that** the said sealed connection of the second portion (30b) of the said sleeve (30) inside the chamber (14) to a corresponding portion of the nozzle (12) makes use of at least a couple of gaskets (32) longitudinally spaced from each other in order to ensure a proper sealing action independently of the thickness of the backrest (10).

**10.** A bath tub for hydromassage according to any of the preceding claims, **characterized in that** the duration of the sequence with which the nozzles (12) are fed with the liquid by the distributor is determined by the speed of rotation of the said second member (24) with respect to the said first stationary member (20).

**11.** A bath tub for hydromassage according to any of the preceding claims, **characterized in that** the said distributor is also connected to a duct (21) which is in turn connected to the waste outlet of the bath tub so as to be fully discharged from the residual liquid at the end of the usage.

**12.** A bath tub for hydromassage according to claim 11, **characterized in that** valve means (23) are provided in the said duct (21) which are activated by sensing means (25) for detecting when the level of the liquid in the bath tub has reached a predetermined minimum value during the emptying at the end of the usage.

**13.** A bath tub for hydromassage according to claim 12, **characterized in that** the said predetermined minimum value of the level of the liquid substantially corresponds to the height of the lowemost one of the nozzles (12) with respect to the bottom of the tub.

**Patentansprüche**

**1.** Badewanne für Hydromassage mit einer Vorrichtung für die Hydromassage des Rückens des Benutzers, mit mindestens einer Reihe von Düsen (12) zum Liefern einer Flüssigkeit unter Druck, wobei jede Reihe von Düsen (12) mindestens ungefähr parallel zu der Mittelachse der Rückenlehnenwand der Wanne ist, und einem Verteiler, der angepaßt ist an das Zuführen

- gemäß einer vorbestimmten Abfolge, die zyklisch während einer vorbestimmten Zeitdauer wiederholt wird - der von einer Lieferquelle (27) gelieferten Flüssigkeit zu den Düsen (12), wobei der Verteiler aufweist:
  - ein erstes stationäres Teil (20), das mit der Quelle (27) verbunden ist und mit Öffnungen (22) versehen ist, die geeignet sind zum Ermöglichen, daß die Flüssigkeit unter Druck von der Quelle (27) zu den Düsen (12) fließt, und
  - ein zweites Teil (24), das innerhalb des ersten Teiles (20) angeordnet ist, und drehend bewegbar in bezug auf dasselbe ist, wobei das zweite Teil mit einer Mehrzahl von Löchern (28) versehen ist, wodurch die Drehbewegung des zweiten Teiles (24) in bezug auf das erste Teil (20) bewirkt, daß die in dem zweiten Teil vorgesehenen Löcher (28) in und aus der Ausrichtung mit den in dem ersten Teil (20) vorgesehenen Öffnungen (22) kommen,

**dadurch gekennzeichnet,**

- **daß** der Verteiler auch eine Leitung oder Gehäuse (16), die/das das erste Teil (20) umgibt, und eine Mehrzahl von Kammern (14), auf denen die Düsen (12) in Verbindung damit angebracht sind, aufweist,
- und **daß** die Anordnung der in dem zweiten Teil (24) vorgesehenen Löcher (28) derart ist, daß die Drehung des letzteren in bezug auf das erste Teil (20) bewirkt, daß die Flüssigkeit unter Druck aufeinanderfolgend in die verschiedenen Kammern (14) eingeführt wird, wenn die gleichen Löcher (28) mit den in dem ersten Teil (20) vorgesehenen entsprechenden Öffnungen (22) ausgerichtet sind, so daß eine Abfolge von Flüssigkeitsstrahlen erzielt wird, die aus den Düsen (12) austreten.

**2.** Badewanne für Hydromassage nach Anspruch 1, **dadurch gekennzeichnet, daß** die Kammern (14) längsweise in zwei parallelen Reihen getrennt voneinander auf diametral gegenüberliegenden Röhrenabschnitten (18a, 18b) gebildet sind, die bevorzugt als eine Einstückanordnung mit der externen Wand (16a) der Leitung oder des Gehäuses (16) gebildet sind.

**3.** Badewanne für Hydromassage nach Anspruch 1 oder 2, **dadurch gekennzeichnet, daß** das zweite Teil (24) durch einen Röhrenkörper gebildet ist, auf dem die Löcher (28), die darin vorgesehen sind, im bezug aufeinander versetzt sind.

**4.** Badewanne für Hydromassage nach Anspruch 3, **dadurch gekennzeichnet, daß** das zweite Teil (24) aus einer Mehrzahl von Abschnitten (26) besteht, bevorzugt einer gleichen Länge, auf denen die Löcher (28) diametral gegenüberliegend in mindestens einem Paar angeordnet sind, wobei die Löcher (28) eines jeden der Abschnitte (26) in einem bevorzugten und konstanten Winkel, allgemein ein

spitzer Winkel, versetzt sind.

**5.** Badewanne für Hydromassage nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, daß** jede Reihe von Düsen (12) aus einer gleichen Zahl von Düsen zusammengesetzt ist, die in gleichen Abständen in bezug aufeinander vorgesehen sind.

**6.** Badewanne für Hydromassage nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, daß** jede Düse (12) an der zugehörigen Kammer (14) mittels eines Hülsenelementes (30) befestigt ist, das auf derselben vorgesehen ist und in Verbindung damit steht.

**7.** Badewanne für Hydromassage nach Anspruch 6, **dadurch gekennzeichnet, daß** das Hülsenelement (30), das von im wesentlichen zylindrischer Form ist, aus einem ersten Abschnitt (30a), der außerhalb der Kammer (14) für eine Gewindeverbindung mit einem entsprechenden Abschnitt der Düse (12) vorsteht, und einen zweiten Abschnitt (30b) innerhalb der Kammer (14) für eine abgedichtete Verbindung mit einem anderen entsprechenden Abschnitt der gleichen Düse (12) besteht.

**8.** Badewanne für Hydromassage nach einem der Ansprüche 2 bis 7, **dadurch gekennzeichnet, daß** die Anordnung, die aus der Leitung oder dem Gehäuse (16) und den Röhrenabschnitten (18a, 18b) besteht, extern an der Rückwand der Rückenlehnenwand (10) so angebracht und befestigt ist, daß sie an den Enden der Düsen (12) befestigt ist, die von der Außenoberfläche der Wanne vorstehen.

**9.** Badewanne für Hydromassage nach Anspruch 7 oder 8, **dadurch gekennzeichnet, daß** die abgedichtete Verbindung des zweiten Abschnittes (30b) der Hülse (30) innerhalb der Kammer (14) mit einem entsprechenden Abschnitt der Düse (12) mindestens ein Paar von Dichtungen (32) benutzt, die längsweise voneinander beabstandet sind, zum Sicherstellen einer geeigneten Abdichtwirkung unabhängig von der Dicke der Rückenlehne (10).

**10.** Badewanne für Hydromassage nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, daß** die Dauer der Abfolge, mit der die Düsen (12) mit der Flüssigkeit durch den Verteiler beliefert werden, durch die Drehgeschwindigkeit des zweiten Teiles (24) in bezug auf das erste stationäre Teil (20) bestimmt ist.

**11.** Badewanne für Hydromassage nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, daß** der Verteiler ebenfalls mit einer Leitung (21) verbunden ist, die wiederum mit dem Abwasserauslaß der Badewanne verbunden ist, so daß die Restflüssigkeit an dem Ende der Benutzung vollständig ausgegeben wird.

**12.** Badewanne für Hydromassage nach Anspruch 11, das Ventilmittel (23) in der Leitung (21) vorgesehen sind, die durch ein Erfassungsmittel (25) zum Erfassen, wann der Pegel der Flüssigkeit in der Badewanne einen vorbestimmten Minimalwert während des Entleerens an dem Ende der Benutzung erreicht hat, aktiviert werden.

**13.** Badewanne für Hydromassage nach Anspruch 12, **dadurch gekennzeichnet, daß** der vorbestimmte Minimalwert des Pegels der Flüssigkeit im wesentlichen der Höhe der untersten der Düsen (12) in bezug auf den Boden der Wanne entspricht.

## Revendications

**1.** Baignoire d'hydro-massage ayant un dispositif pour l'hydro-massage du dos de l'utilisateur, comportant au moins une série de buses (12) pour fournir un liquide sous pression, chaque série de buses (12) étant au moins approximativement parallèle à l'axe médian de la paroi de dossier (10) de la baignoire, et un distributeur adapté pour alimenter, selon une séquence prédéterminée répétée de manière cyclique pendant une période de temps prédéterminée, les buses (12) en liquide délivré par une source d'alimentation (27), ledit distributeur comportant :

- un premier élément stationnaire (20) qui est connecté à ladite source (27) et qui est muni d'ouvertures (22) adaptées pour permettre au liquide sous pression de s'écouler à partir de la source (27) vers lesdites buses (12), et

- un second élément (24) qui est agencé à l'intérieur dudit premier élément (20), et qui est mobile en rotation par rapport à celui-ci, ledit second élément étant muni d'une pluralité de trous (28), de sorte que le mouvement de rotation du second élément (24) par rapport au premier élément (20) amène les trous (28) situés dans le second élément à venir en alignement avec les ouvertures (22) agencées dans le premier élément (20), et hors d'alignement avec celles-ci, **caractérisée en ce que** :

  - ledit distributeur comporte également un conduit ou carter (16) entourant ledit premier élément (20) et une pluralité de chambres (14) sur lesquelles sont montées les buses (12) en communication avec celui-ci,

- et **en ce que** l'agencement des trous (28) pratiqués dans ledit second élément (24) est tel que la rotation de ce dernier par rapport audit premier élément (20) amène le liquide sous pression à être introduit successivement dans les différentes chambres (14) lorsque ces mêmes trous (28) sont alignés avec les ouvertures correspondantes (22) pratiquées dans le premier élément (20), de manière à obtenir une séquence de jets de liquide émergeant des buses (12).

**2.** Baignoire d'hydro-massage selon la revendication 1, **caractérisée en ce que** lesdites chambres (14) sont formées longitudinalement en deux rangs parallèles séparés l'un de l'autre sur des parties tubulaires diamétralement opposées (18a, 18b) qui se présentent de préférence sous la forme d'un ensemble en une seule pièce avec la paroi extérieure (16a) dudit conduit ou carter (16).

**3.** Baignoire d'hydro-massage selon la revendication 1 ou 2, **caractérisée en ce que** le second élément (24) est formé par un corps tubulaire sur lequel les trous (28) pratiqués dans celui-ci sont décalés les uns par rapport aux autres.

**4.** Baignoire d'hydro-massage selon la revendication 3, **caractérisée en ce que** ledit second élément (24) est constitué d'une pluralité de parties (26), de préférence d'une longueur égale, sur lesquelles sont pratiqués les trous (28) diamétralement opposés en au moins une paire, les trous (28) de chacune desdites parties (26) étant décalés selon un angle préféré et constant, de manière générale un angle aigu.

**5.** Baignoire d'hydro-massage selon l'une quelconque des revendications précédentes, **caractérisée en ce que** chaque série de buses (12) est constituée d'un nombre égale de buses qui sont à égale distance les unes des autres.

**6.** Baignoire d'hydro-massage selon l'une quelconque des revendications précédentes, **caractérisée en ce que** chaque buse (12) est fixée sur la chambre associée (14) par l'intermédiaire d'un élément formé d'un manchon (30) agencé sur celle-ci, et communicant avec celle-ci.

**7.** Baignoire d'hydro-massage selon la revendication 6, **caractérisée en ce que** ledit élément formé d'un manchon (30), qui est d'une forme sensiblement cylindrique, est constitué d'une première partie (30a) faisant saillie à l'extérieur de la chambre (14) pour une connexion filetée avec une partie correspondante de la buse (12), et d'une seconde partie (30b) située à l'intérieur-de-la-chambre (14) pour une connexion rendue-étanche avec une autre partie correspondante de la même buse (12).

**8.** Baignoire d'hydro-massage selon l'une quelconque des revendications 2 à 7, **caractérisée en ce que** l'ensemble constitué dudit premier conduit ou carter (16) et desdites parties tubulaires (18a, 18b) est monté et fixé à l'extérieur de la paroi arrière de la paroi de dossier (10), de manière à être fixé sur l'extrémité des buses (12) faisant saillie à partir de la surface extérieure de la baignoire.

**9.** Baignoire d'hydro-massage selon la revendication 7 ou 8, **caractérisée en ce que** ladite connexion rendue étanche de la seconde partie (30b) dudit manchon (30) à l'intérieur de la chambre (14) sur une partie correspondante de la buse (12) utilise au moins un couple de joints d'étanchéité (32) espacés longitudinalement les uns des autres pour garantir une action d'étanchéité correcte indépendamment de l'épaisseur du dossier (10).

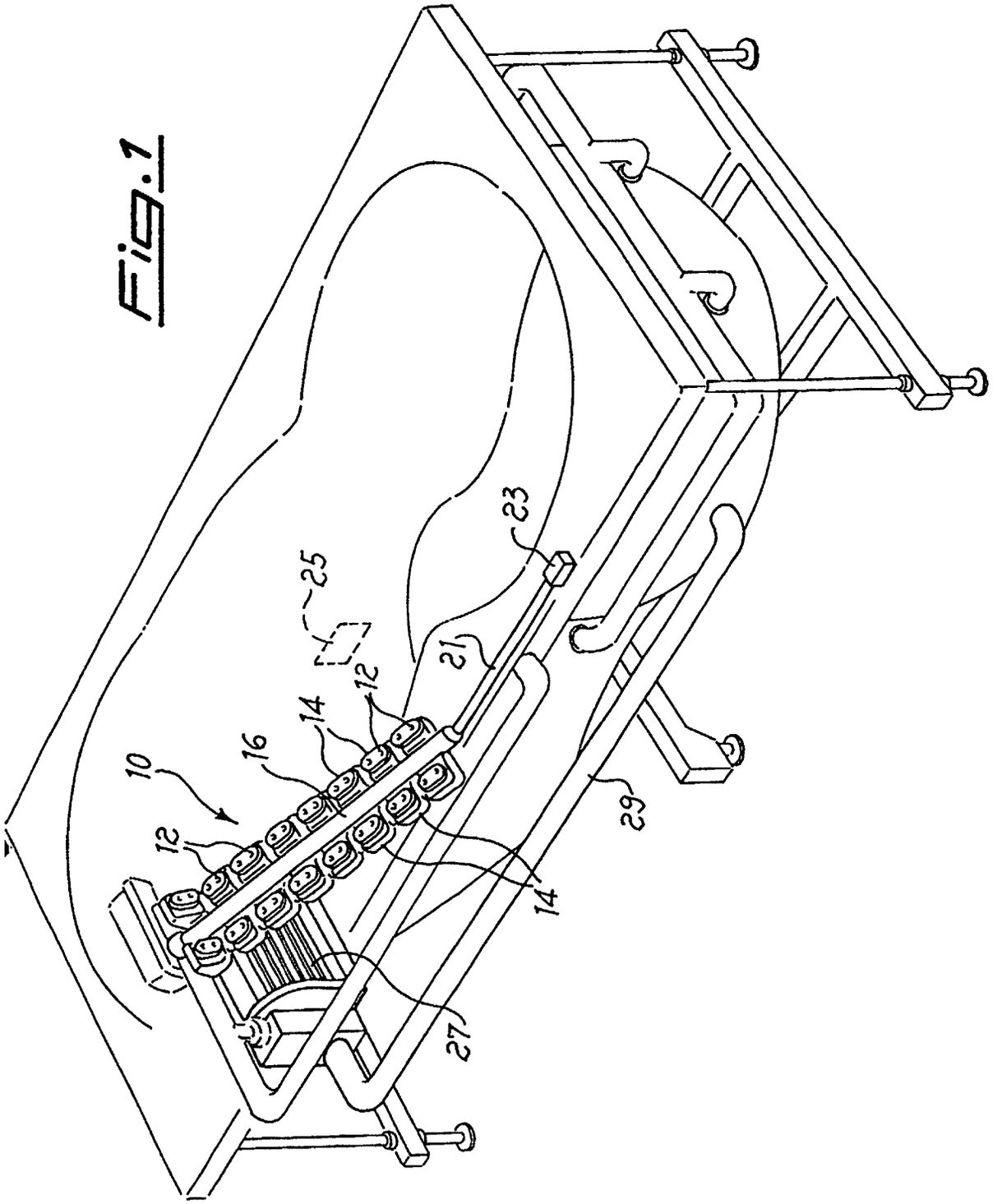
**10.** Baignoire d'hydro-massage selon l'une quelconque des revendications précédentes, **caractérisée en ce que** la durée de la séquence selon laquelle les buses (12) sont alimentées en liquide par le distributeur est déterminée par la vitesse de rotation dudit second élément (24) par rapport audit premier élément stationnaire (20).

**11.** Baignoire d'hydro-massage selon l'une quelconque des revendications précédentes, **caractérisée en ce que** ledit distributeur est également connecté à un conduit (21) qui est à son tour connecté à la sortie d'évacuation de la baignoire, de manière à être entièrement évacué du liquide résiduel à la fin de l'utilisation.

**12.** Baignoire d'hydro-massage selon la revendication 11, **caractérisée en ce que** des moyens formant vanne (23) sont agencés dans ledit conduit (21), qui sont activés par des moyens de détection (25) pour détecter lorsque le niveau de liquide dans la baignoire a atteint une valeur minimum prédéterminée pendant le vidage à la fin de l'utilisation.

**13.** Baignoire d'hydro-massage selon la revendication 12, **caractérisée en ce que** ladite valeur minimum prédéterminée du niveau de liquide correspond sensiblement à la hauteur de la plus inférieure parmi les buses (12) par rapport au fond de la baignoire.

Fig.1



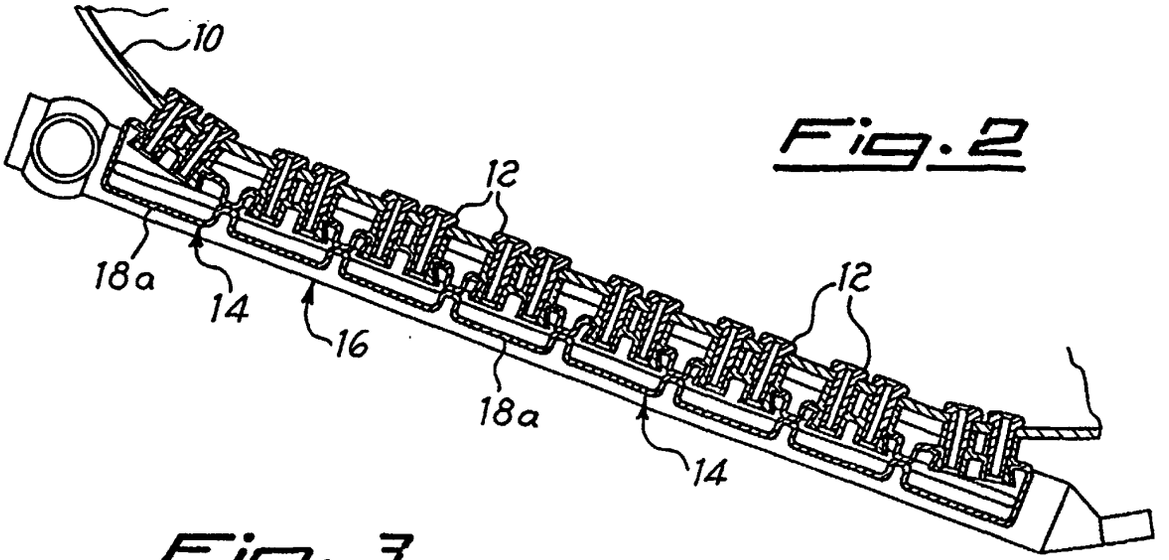
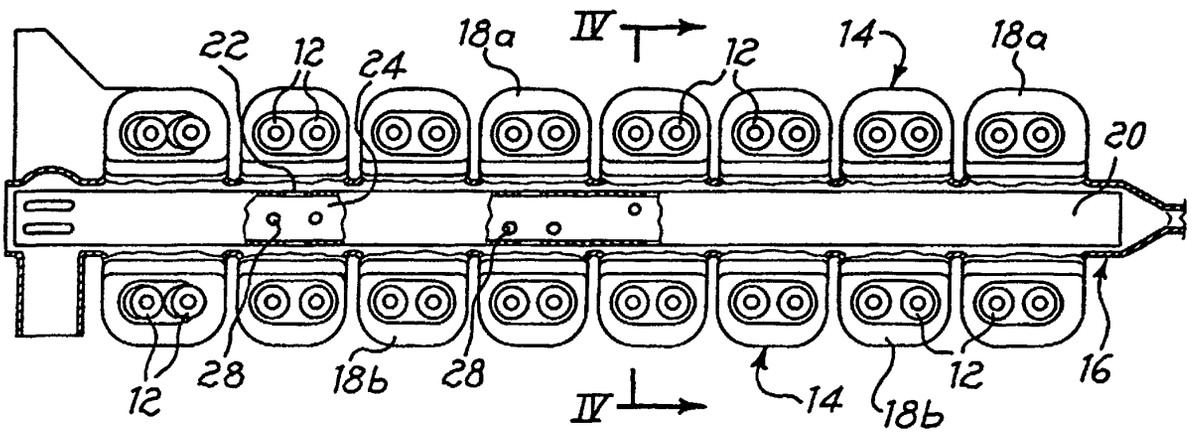



Fig.2

Fig.3



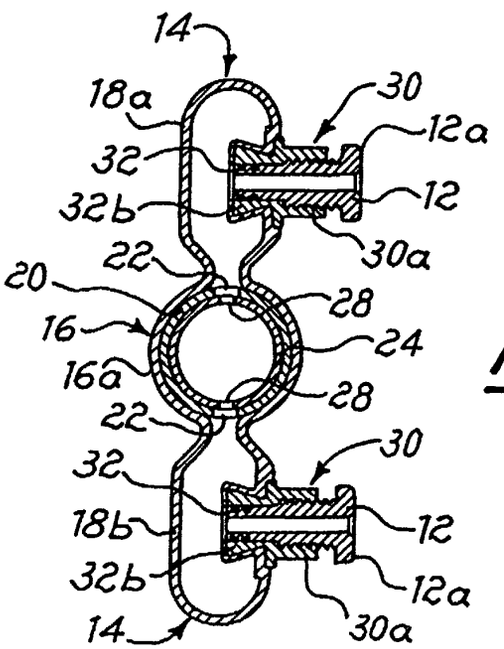




Fig.4

Fig.5

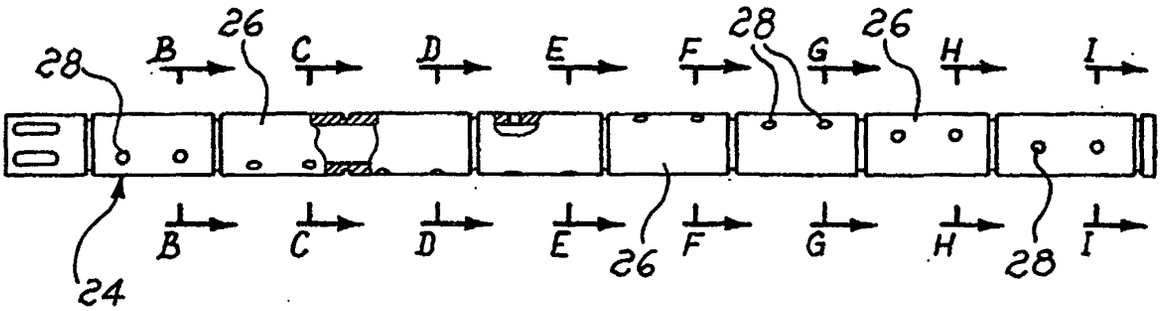



Fig.6

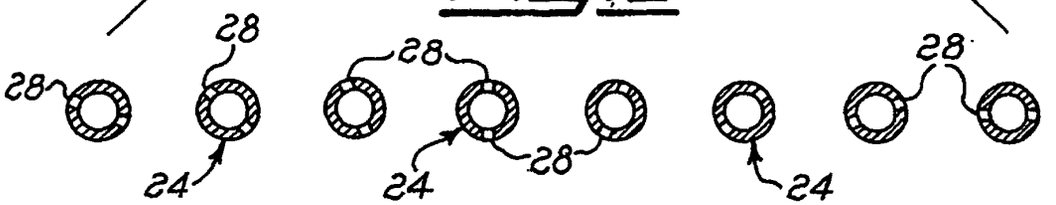


Fig. 7