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(54) PULSATING WATER JET MASSAGE ASSEMBLY FOR SHOWERS AND HANDSPRAYS

ANORDNUNG FÜR PULSIERENDE WASSERSTRAHLMASSAGE FÜR DUSCHEN UND HANDBRAUSEN

UNITÉ DE MASSAGE PAR JET D'EAU PULSÉ POUR DOUCHES ET DOUCHETTES

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Description

FIELD OF THE INVENTION

[0001] The present invention is directed to a massaging water jet assembly for use in a showerhead, handspray or comparable water delivery device. More particularly, the present invention is an improved assembly for a pulsating water jet massage assembly having a valve rotor with widely curved blades to achieve a higher rotation speed. This feature is provided in combination with one or more nozzles that are arranged ortohogonally on an adjacent rotor base for repeatable and predictable production of symmetric water jets. In this configuration, a shower handspray or like device delivers water with a desirably intense effect over an optimally large skin surface area, achieving desirable therapeutic effects without the additional consumption of potable water.

BACKGROUND OF THE INVENTION

[0002] Individuals have long recognized the therapeutic benefits of massage for treatment of numerous physical and psychological maladies and also for attainment of general wellness. Massage in its numerous forms is a well-accepted means of reducing stress and aiding relaxation, relieving muscle tension and stiffness, enhancing athletic performance, alleviating depression and anxiety, reducing exacerbated respiratory and pulmonary rates, lowering blood pressure, alleviating musculoskeletal pain, increasing blood circulation and lymph flow, improving range of motion, enhancing health and nourishment of the skin and increasing endorphins (source: American Massage Therapy Association, www.amtamassage.org). As people all over the world engage in increasingly hectic schedules, there is an escalating need for pampering and treatment from readily accessible sources found in the home and workplace.

[0003] Sanitary manufacturers increasingly recognize consumers' desire to derive the benefits of massage during daily activities such as bathing and showering. Delivery of water to the skin is inherently pleasant and provides the potential for enhanced pampering, rather than mere cleansing, in the bathroom. Such manufacturers have developed numerous sanitary products, such as showerheads and handsprays, which deliver pulsating massage action and generate various massage effects (i.e., shiatsu, acupressure, deep tissue, etc.).

[0004] As is well-known in the industry, pulsating water massage constructions typically employ a water jet assembly having an annular cap member disposed adjacent a stationary nozzle member such that the cap and nozzle members house a rotary valve member therebetween. A typical nozzle member (10) (shown in detail in Figure 1) has a generally annular base 10a within which a plurality of nozzles 12 are defined in tangential relation to a circular aperture 14. Nozzles 12 are shown in a conventional arrangement wherein two or more nozzles are aligned in each of two or more nozzle groups 12a such that each group 12a assumes a predetermined tangential configuration relative to aperture 14. Nozzle member 10 is typically disposed in combination with a rotary valve member 16 comprising a rotor base 16a having a window 17 defined along at least a portion thereof (see Figure 2). Rotor base 16a supports a plurality of annularly disposed blades 20 thereon, wherein each such blade is a generally straight member that extends tangentially relative to an annular blade hub 22. When fluid enters the water jet assembly through a single port provided in the cap member (as is known in the art) and impinges on at least one blade 20, rotary valve member 16 freely rotates adjacent nozzle member 10. Such rotation intermittently permits water delivery through one nozzle group 12a when window 17 is positioned thereover so as to deliver discrete water volumes upon a user's skin.

[0005] See also, for instance, US Patent No. 4,203,550 to On which discloses a pulsating water jet massage assembly according to the preamble of claim 1, i.e shower head assembly having a rotor blade 7 with straight blades 7A and base portions 7B that intermittently occlude one or more groups of nozzles 4A of a water chamber. A lower casing member 3 is provided with windows 3A and arranged such that windows 3A can be brought into registry with all three groups 4A. Occlusion of at least one group 4A incurs a continuous spray and diminishes any pulsating effect of the spray on a skin surface.

[0006] Although such conventional water jet assemblies provide some massaging effect, the assembly configurations described hereinabove suffer from a number of inherent drawbacks. A straight blade configuration inhibits rotor speed during operation of the assembly, negatively affecting both the massage effect felt by the user and the noise sensed by the user (thereby attenuating the enjoyment of a purportedly relaxing experience). In addition, the employment of a single fluid entry port allows registry of the port with only one nozzle group at a time. This configuration limits the skin surface area to which water is delivered and prevents predictable and repeatable delivery of water through the unoccluded nozzles.

[0007] It is therefore desirable to achieve dependable massage effects in a fluid delivery device such as a shower or handspray without installation and/or extensive renovation of existing sanitary installations. It is further desirable to deliver a repeatably intense massage effect without increasing water consumption. Such benefits should be realized in a pulsating water jet assembly construction that is easily manufactured and inexpensively installed in a plurality of bathroom configurations.

SUMMARY OF THE INVENTION

[0008] It is an advantage of the present invention to provide a water jet massage assembly that consistently and repeatedly delivers optimal massage effects to a user.

[0009] It is another advantage of the present invention

to provide a water jet massage assembly that can be installed with new or existing showers and handsprays.

[0010] It is yet another advantage of the present invention to deliver symmetric and homogenous pulsating jets to a skin surface for benefits of a deeper massage.

[0011] It is also an advantage of the present invention to provide an enhanced water jet massage assembly that achieves the aforementioned advantages without sacrificing potable water resources. ;

[0012] In the achievement of these and other advantages, the present invention provides An improved a water jet massage assembly having a housing with a cavity that accommodates a rotary turbine member therein. The housing cavity is defined by a generally circumferential wall having a plurality of threads along an outside surface to accommodate securement of the assembly with a water delivery device. The housing cavity is delineated by a housing wall proximate extent, adjacent a static cap member, and a housing wall distal extent, adjacent a static housing base. A plurality of fluid ports is radially disposed along a circumferential periphery of the proximate extent, and each port has a predetermined entry angle. The housing base has a floor from which a cylindrical shaft depends normally upwardly such that the shaft is concentrically disposed relative to the housing wall and accommodates free rotation of the turbine member in the housing cavity. The housing base further includes a plurality of nozzles arranged in at least two nozzle groups. Each nozzle group comprises a single nozzle or at least two nozzles aligned along a common axis. The nozzle groups are desirably defined along orthogonal axes relative to the shaft to produce a requisite water discharge phase.

[0013] The turbine member has a generally cylindrical hub portion from which a plurality of vanes or blades radially extends. Each blade assumes a wide curvature and a back-curved configuration wherein each blade's varying thickness can be viewed along the respective blade profile. In this configuration, maximum torque on the turbine is realized in a predictable and repeatable manner. The blades are desirably disposed in equidistant succession along the circumferential extent of the hub. The turbine member further includes a pair of symmetric rotor tabs provided at the base of the hub and orthogonally disposed relative thereto. A window is defined between successive tabs so that rotation of the turbine member reveals one or more of the nozzle groups in the housing floor. Rotation of the turbine member moves the symmetric tabs, and thereby the symmetric windows, in alternating registry with the nozzle groups for alternating water delivery therethrough.

[0014] Various other advantages and features of the present invention will become readily apparent from the following detailed description.

BRIEF DESCRIPTION OF TOE DRAWINGS

[0015]

Figures 1 is a top view of a nozzle member used with a water jet massage assembly of the prior art.

Figure 2 is a top view of a rotary turbine member used with a water jet massage assembly of the prior art.

Figure 3 is a perspective view of a water jet massage assembly of the present invention.

Figure 4 is an exploded perspective view of a water jet massage assembly of the present invention.

Figures 5 and 6 are sectional and exploded sectional views, respectively, of the water jet assembly of the present invention.

Figure 7 is a perspective view of a rotary turbine member used in the water jet assembly of the present invention.

Figure 7 (A) is a top view of the rotary turbine member of Figure 7.

Figure 7(B) is a sectional view of the rotary turbine member of Figure 7(A) taken along line A-A.

Figure 7(C) is a detailed view of area A of Figure 7(A).

Figure 8 is a top view of the rotary turbine member of Figure 7 in communication with a housing having a pair of axially disposed nozzle groups therein.

Figure 9 is a top view of the rotary turbine member of Figure 7 in communication with a housing having an alternate nozzle configuration.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0016] Now referring to the figures, wherein like elements are identically numbered, a water jet massage assembly 100 of the present invention is shown having a housing 110 with a cavity 112 that accommodates a rotary turbine member 120 therein (see Figures 4 to 6). Housing cavity 112 is defined by a generally circumferential wall 112a and more particularly by an inside surface 112a' thereof. Along an outside surface 112a" of housing wall 112a, one or more threads 300 are circumferentially disposed for securement of assembly 100 with a water delivery device such as a shower, handspray or equivalent thereof. Securement means for assembly 100 is not limited to threads 300 and may include friction fit engagement means, notch and recess engagement means, tongue and groove engagements means, epoxy or any equivalent thereof that is amenable to practice of the present invention. Such securement means does not form a part of the present invention.

[0017] Housing cavity 112 is delineated by a proximate extent 112b of housing wall 112a, adjacent a static cap member 130, and a distal extent 112c, adjacent an annular housing base 114 (also a static element). Cap member 130 is a generally annular member having an outside planar surface 130a and an inside planar surface 130b together defining a predetermined thickness therebetween. Inside cap surface 130b lays proximate turbine member 120 upon closure of housing cavity 112 by cap member 130. A protrusion 132 may depend normally

from inside cap surface 130b for communication with at least one of turbine member 120 and housing 110. Cap member 130 is secured to housing wall 112a via frictional, threaded or snap-tight engagement, or any other securement means that effects detachable fastening of cap 130 to housing wall 112a.

[0018] Housing base 114 includes a generally annular flange portion 114a that circumscribes distal extent 112c of housing wall 112a. A housing floor 116 is provided with a circumferential extent defined by inside wall surface 112a'. Floor 116 is a generally planar member having a cylindrical shaft 117 depending normally upwardly therefrom such that shaft 117 is concentrically disposed relative to housing wall 112a and accommodates free rotation of turbine member 120 thereabout. Housing base 114 further includes a plurality of nozzles 118 arranged in at least two nozzle groups 118a, wherein each nozzle group 118a comprises a single nozzle or at least two nozzles aligned along a common axis (see Figure 8). Nozzle groups 118a may alternatively be defined along orthogonal axes relative to shaft 117 (see Figure 9). In each embodiment, water is delivered through nozzles 118 so as to produce a homogeneous, "axial-symmetric" pulsating jet (described further hereinbelow). It is essential to provide successive nozzles 118 along orthogonal axes in order to achieve a water discharge phase that sufficiently delivers the desired wide-reaching spray without detrimentally impeding water flow.

[0019] A plurality of fluid ports 119 is provided along proximate extent 112b of housing wall 112a so as to be radially disposed along a circumferential periphery thereof (as particularly shown in Figure 4). Each port 119 establishes fluid communication between a fluid source and housing cavity 112 to effect operation of turbine member 120 therewithin. As seen in Figures 4 and 6, each port 119 has a predetermined entry port angle such that port 119 assumes a slight inclination (preferably at or about 17°) for transport of water along a designated flow path and consequential direction of the water flow to operate turbine member 120. Unlike conventional water jet massage assemblies, the radially disposed ports of the present invention inhibit turbulent flow and thereby optimize available energy for delivery to the user. Securement of cap member 130 to housing wall 112a ensures that ports 119 provide the only entry for water to assembly 100. Further sealing is optionally provided by one or more sealing members such as O-ring 135 shown in Figure 6).

[0020] Now referring to Figures 7 and 7(A) to 7(C), turbine member 120 can be described in further detail. Turbine member 120 is a freely rotating member having a generally cylindrical hub portion 122 with a cylindrical aperture 122a having a diameter D (see Figure 7(B)). Aperture 122a is sufficiently sized to accept insertion of shaft 117 therein and permit free movement of turbine member 120 thereabout. Protrusion 132 from inside cap surface 130b desirably communicates with at least one of aperture 122a and shaft 117 to effect releasable attachment of cap member 130 as part of assembly 100 (although such construction is not essential). It is understood that turbine member 120 may have a shaft that is in insertable communication in a complementary aperture defined in housing member 110 so as to permit free rotation of the turbine member relative to the housing. It is further understood that rotatable communication between turbine member 120 and housing 110 may be effected by any means amenable to practice of the present invention and is not limited to the insertable shaft configuration shown and described herein.

[0021] Hub 122 supports a plurality of vanes or blades 124 thereby, wherein the blades 124 have a uniform height H (see Figure 7(B)) and a uniform angular extent over θ° (see Figure 7(C)). The quantity of blades 124 is not limited to the configuration shown in the drawings. Each blade 124 assumes a wide curvature such that an inside radius R1 of each blade is sufficient for the blade to assume a back-curved configuration (see Figure 7(C)). Each vane has varying thickness viewed along the length of the respective blade and defined by the range of radiuses between R2 and R3 as measured from a common central axis (designated at X in Figure 7(C)). Although the range of thicknesses can be altered among different turbine members, any one turbine member 120 must have consistently defined thickness variations along the profile of each blade. In this configuration, maximum torque on the turbine is realized in a predictable and repeatable manner. Although it would be desirable to provide blades that are generally spoon-shaped so as to be tangent with the turbine's external and internal circumferences, such configuration would incur a back flow with a consequential braking action on successive blades. Therefore, each blade is provided with a slight inclination that is at or about the same inclination assumes by port 119 in order to avoid sharp deviations in water flow. Although any number of blades 124 may be employed that is amenable to successful operation of the present invention, blades 124 are desirably disposed in equidistant succession along the circumferential extent of hub 122 to prevent detrimental pressure and fluid velocity differences along the blade profiles.

[0022] Turbine member 120 further includes a pair of symmetric rotor tabs 126 provided at the base of hub 122 and orthogonally disposed relative thereto (see Figures 8 and 9). A window 128 is defined between successive tabs 126 such that rotation of turbine member 120 reveals one or more nozzle groups 118a when turbine member 120 operates in housing cavity 112. Symmetric windows 128 desirably comprise an area equal to that assumed by tabs 126, thereby creating two main symmetric jets that are arranged orthogonally.

[0023] In operation, assembly 100 is threadedly fastened to a shower or handspray via threads 300 disposed along outer surface 112a" of housing wall 112a. A water source in fluid communication with the shower or handspray delivers water through at least one fluid entry port 119 so as to initiate rotation of turbine member 120. Consequent turbine rotation moves symmetric tabs 126, and

thereby symmetric windows 128, in alternating registry with aligned nozzle groups 118a for alternating water delivery therethrough. The wide curvature of blades 124 ensures that turbine member 120 operates at an enhanced velocity while maintaining predictable and symmetric water jet delivery during rotation of turbine member 120 relative to nozzles 118a.

[0024] At least one of cap member 130, housing 110 and turbine member 120 may be manufactured from polyoxymethylene (POM) or any other equivalent material that ensures low friction without wear (and consequent durable operation of assembly 100). The material composition of any element of assembly 100, however, is not limited to this material, and any material (metal, plastic, composite, etc.) may be used that is amenable to use with the present invention.

[0025] The water jet massage assembly of the present invention incorporates turbine blade shapes having wide curvature in combination with a slight inclination and equidistant radial placement. With this turbine configuration, the present invention realizes effective use of water energy (in terms of flow rate and pressure) to achieve a higher rotation speed. As a result, the pulsating jets have a desirably higher frequency distributed over a larger surface area, thereby producing a deeper and more enjoyable massage for the user. Such high speed rotation additionally reduces noise inherent in conventional water jet massage assembly constructions. These benefits are achieved without excessive consumption of potable water.

[0026] The present invention water jet massage assembly can come pre-installed with a variety of shower and handspray designs to provide a plurality of aesthetic appearances and sizes. The water jet massage assembly of the present invention may also be readily installed in existing commercial or residential bathrooms, locker rooms and the like. The present invention can therefore also coexist alongside conventional fluid delivery devices or completely replace such devices without changing the number of showerheads or the structural integrity of the water delivery system in fluid communication therewith.

[0027] Various changes to the foregoing described and shown structures would now be evident to those skilled in the art. The matter set forth in the foregoing description and accompanying drawings is therefore offered by way of illustration only and not as a limitation. Accordingly, the particularly disclosed scope of the invention is set forth in the following claims.

Claims

1. A pulsating water jet massage assembly (100) for a water delivery device such as a shower or handsprays, comprising:

an assembly housing (110) having a circumferential wall (112a) with a proximate extent (112b), a distal extent (112c) and an inside surface (112a') defining a housing cavity (112) thereby for placement of a freely rotatable turbine member (120) therein, said housing wall (112a) further having an outside surface (112a") having means (300) for securement of said assembly with said waster delivery device; said housing (110) further including a base (114) adjacent said distal wall extent (112c) and having a flange portion that circumscribes said distal extent (112c) and a housing floor (116) having a generally circumferential extent defined by said inside wall surface (112a'), said housing base (114) further including a plurality of nozzles (118) arranged in at least two nozzle groups (118a) wherein each said nozzle group (118a) comprises at least one nozzle (118), said at least one nozzle (118) being aligned along a common axis relative to any adjacent nozzle (118) in said nozzle group (118a); said housing (110) further including a plurality of fluid ports (119) along said proximate wall extent (112b) so as to be radially disposed therearound,

said freely rotatable turbine member (120) having a hub portion (122) supporting a plurality of blades (124) thereby, wherein each blade (124) has a height equal to a height of a successive blade (124) and a predetermined longitudinal extent over a predetermined angle, said blades (124) being placed in equidistant succession along a periphery of said hub portion (122); said turbine member (120) further including a pair of symmetric rotor tabs (126) disposed at a base of said hub portion (122) and orthogonally disposed relative thereto, such that a window (128) is defined between successive tabs (126) to reveal at least one of said nozzle group (118a) when said turbine member (120) rotates in said housing cavity (112); and

a cap member (130) disposed adjacent said proximate wall extent (112b) having an outside planar surface (130a) and an inside planar surface (130b) together defining a predetermined thickness therebetween, wherein said inside cap surface (130b) lies proximate said turbine member (120) upon closure of said housing cavity (112) by said cap member (130);

wherein each said port (119) establishes fluid communication between a fluid source and said housing cavity (112) via a predetermined entry angle for transport of water along a designated flow path and consequential direction of the water flow to operate said turbine member (120), said housing (110) and turbine member (120) having means for free rotation of said turbine member (120) relative to said housing (110) such that said rotor tabs (126) move in alternating registry with said nozzle groups (118a) for

pulsating water delivery therethrough

characterized in that each said blade (124) has a curvature such that an inside radius (R1) of each said blade is sufficient for the blade to assume a back-curved configuration and a predetermined angle of inclination relative to a tangential surface of said hub portion (122).

2. The pulsating water jet massage assembly (100) of claim 1, wherein said means for rotation comprises an aperture on one of said housing (110) and said turbine (120) member and a complementary shaft on another of said housing (110) and said turbine (120) member such that said aperture accommodates freely rotatable placement of said shaft therein.

3. The pulsating water jet massage assembly (100) of claim 2, wherein said shaft is a cylindrical member depending normally upwardly from said housing floor (116) such that said shaft is concentrically disposed relative to said housing wall (112a).

4. The pulsating water jet massage assembly (100) of claim 3, wherein said hub potion (122) of said turbine member (120) includes a cylindrical aperture of predetermined diameter for acceptance of said housing shaft therewithin and free movement of said turbine member (120) thereabout.

5. The pulsating water jet massage assembly (100) of claim 3, wherein said nozzle groups (118a) are defined along orthogonal axes relative to said shaft.

6. The pulsating water jet massage assembly of claim 2, wherein said cap member (130) includes a protrusion depending normally from said inside cap surface for communication with at least one of said turbine member (120) and said housing (110).

7. The pulsating water jet massage assembly (100) of claim 1, wherein each said blades (124) has varying thickness viewed along said blade longitudinal extent, said thickness defined by a predetermined range of radiuses measured from a common central axis.

8. The pulsating water jet massage assembly (100) of claim 1, wherein said windows (128) desirably comprise an area equal to the area of said rotor tabs (126).

9. The pulsating water jet massage assembly (100) of claim 1, wherein said securement means (300) comprises one or more of frictional engagement, threaded engagement, snap-tight engagement, epoxy, notch and recess configuration, tongue in groove configuration or any equivalent thereof.

10. The pulsating water jet massage assembly (100) of claim 1, wherein at least one of said housing (110), said turbine member (120) and said cap member (130) is formed from polyoxymethylene (POM) or any equivalent material.

Patentansprüche

1. Pulsierende Wasserstrahl-Massageanordnung (100) für eine Wasserausgabevorrichtung wie eine Dusche oder Handbrausen, umfassend:

ein Anordnungsgehäuse (110) umfassend eine Umfangswand (112a) mit einem proximalen Bereich (112b), einem distalen Bereich (112c) und einer inneren Oberfläche (112a'), welche einen Gehäusehohlraum (112) zur Platzierung eines frei drehbaren Turbinenelements (120) bildet, wobei die Gehäusewand (112a) ferner eine äußere Oberfläche (112a") aufweiset, weiche Mittel zum Sichern der genannten Wasserausgabevorrichtung aufweist; wobei das genannte Gehäuse (110) ferner eine an den distalen Wandbereich (112c) angrenzende Basis (114) enthält und einen Flanschabschnitt aufweist, der den genannten distalen Bereich (112c) umgibt, und ein Gehäuseboden (116), der eine im Wesentlichen umfängliche Erstreckung aufweist, der durch die genannte innere Wandoberfläche (112a') gebildet wird, wobei die genannte Gehäusebasis (114) ferner eine Mehrzahl von Düsen (118) enthält, die in mindestens zwei Düsengruppen (118a) angeordnet sind, wobei jede genannte Düsengruppe (118a) mindestens eine Düse (118) umfasst, wobei die genannte mindestens eine Düse (118) entlang einer gemeinsamen Achse in Bezug auf jede angrenzende Düse (118) in der genannten Düsengruppe (118a) ausgerichtet ist; wobei das genannte Gehäuse (110) ferner eine Mehrzahl von Fluidöffnungen (119) entlang des genannten proximalen Wandbereichs (112b) enthält, so dass diese radial da herum angeordnet sind,
wobei das genannte frei drehbare Turbinenelement (120) einen Nabenabschnitt (122) hat, der eine Mehrzahl von Schaufeln (124) trägt, wobei jede Schaufel (124) eine Höhe gleich der Höhe einer nachfolgenden Schaufel (124) und eine vorbestimmte Längserstreckung über einen vorbestimmten Winkel hat, wobei die genannten Schaufeln (124) in äquidistanter Folge entlang eines Umfangs des genannten Nabenabschnitts (122) angeordnet sind; wobei das genannten Turbinenelement (120) ferner ein Paar symmetrischer Rotorabdeckungen (126) enthält, die an einer Basis des genannten Nabenabschnitts (122) und rechtwinkelig hierzu ange-

ordnet sind, so dass ein Fenster (128) zwischen aufeinander folgenden Abdeckungen (126) gebildet wird, um wenigstens eine der genannten Düsengruppen (118a) freizugeben, wenn das genannte Turbinenelement (100) in dem genannten Gehäusehohlraum (11) rotiert; und
wobei ein Deckelement (130) an den genannten proximalen Wandbereich (112b) angrenzend angeordnet ist, welches eine ebene äußere Oberfläche (130a) und eine ebene innere Oberfläche (130b) aufweist, die zusammen zwischen einander eine vorbestimmte Dicke bilden, wobei die genannte innere Deckelement-Oberfläche (130b) proximal zum Turbinenelement (120) beim Schließen des genannten Gehäusehohlraums (112) durch das Deckelement (130) liegt; wobei jede genannte Öffnung (119) eine Fluidkommunikation zwischen einer Fluidquelle und dem genannten Gehäusehohlraum (122) entlang eines vorbestimmten Eintrittswinkels zum Transport von Wasser entlang eines bestimmten Strömungspfads und einer sich daraus ergebenden Richtung des Wasserstroms zum betätigen des Turbinenelements (120) bildet, wobei das Gehäuse (110) und das Turbinenelement (120) Mittel zur freien Rotation des genannten Turbinenelements (120) relativ zu dem genannten Gehäuse (110) aufweisen, so dass die genannten Rotorabdeckungen (126) sich alternierend überdeckend mit den genannten Düsengruppen (118a) für eine pulsierende Wasserabgabe hierdurch bewegen, **dadurch gekennzeichnet, dass** jede der genannten Schaufeln (124) eine Krümmung aufweist, so dass ein innerer Radius (R1) jeder Schaufel ausreichend ist, damit das Schaufel eine rückgewölbte Gestalt und einen vorbestimmten Neigungswinkel in Bezug auf eine tangentiale Fläche des genannten Nabenabschnitts (122) annimmt.

2. Pulsierende Wasserstrahl-Massageanordnung (100) nach Anspruch 1, wobei das genannte Rotationsmittel eine Öffnung in dem genannten Gehäuse (110) oder dem genannten Turbinenelement (120) und eine komplementäre Welle an dem Turbinenelement (120) oder dem genannten Gehäuse (110) umfasst, so dass die genannte Öffnung die genannte Welle frei drehbar in sich aufnimmt.

3. Pulsierende Wasserstrahl-Massageanordnung (100) nach Anspruch 2, wobei die genannte Welle ein zylindrisches Element ist, weiches senkrecht nach oben aus dem genannten Gehäuseboden (116) ragt, so dass die genannte Welle konzentrisch in Bezug auf die genannte Gehäusewand (112a) angeordnet ist.

4. Pulsierende Wasserstrahl-Massageanordnung (100) nach Anspruch 3, wobei der genannte Nabenabschnitt (122) des genannten Turbinenelements (120) eine zylindrische Öffnung mit vorbestimmtem Durchmesser zur Aufnahme der genannten Gehäusewelle darin und zur freien Bewegung des genannten Turbinenelements (120) um diese herum aufweist.

5. Pulsierende Wasserstrahl-Massageanordnung (100) nach Anspruch 3, wobei die Düsengruppen (118a) entlang zu der genannten Welle senkrechten Achsen gebildet sind.

6. Pulsierende Wasserstrahl-Massageanordnung (100) nach Anspruch 2, wobei das genannte Dekkelement (130) einen Vorsprung enthält, der zum Zusammenwirken mit dem genannten Turbinenabschnitt (120) und/oder dem genannten Gehäuse (110) senkrecht aus der genannten inneren Fläche des Deckelements heraus ragt.

7. Pulsierende Wasserstrahl-Massageanordnung (100) nach Anspruch 1, wobei jede genannte Schaufel (124) eine variable Dicke entlang der Längserstreckung der Schaufel aufweist, wobei die genannte Dicke durch eine vorbestimmte Reihe von Radien, gemessen von einer gemeinsamen mittleren Achse, definiert ist.

8. Pulsierende Wasserstrahl-Massageanordnung (100) nach Anspruch 1, wobei die genannten Fenster (128) wünschenswerterweise eine Fläche aufweisen, die gleich der Fläche der genannten Rotorabdeckungen (126) ist.

9. Pulsierende Wasserstrahl-Massageanordnung (100) nach Anspruch 1, wobei das genannte Sicherungsmittel (300) mindestens eins der Folgenden aufweist: Reibschluss, Gewindeverbindung, Schnappverbindung, Epoxid, Nut- und Federanordnungen, Zunge in Nutanordnung oder jegliches Äquivalent hiervon.

10. Pulsierende Wasserstrahl-Massageanordnung (100) nach Anspruch 1, wobei das genannte Gehäuse (110) und/oder das genannte Turbinenelement (120) und/oder das genannte Deckelement (130) aus Polyoxymethylen (POM) oder einem beliebigen äquivalenten Material gebildet ist.

Revendications

1. Unité de massage par jet d'eau pulsé (100) pour un dispositif de distribution d'eau tel qu'une douche ou des douchettes, comprenant :

- un boîtier d'unité (110) ayant une paroi circonférentielle (112a) avec un prolongement proximal (112b), un prolongement distal (112c) et une surface interne (112a') définissant une cavité de boîtier (112) pour la disposition d'un élément de turbine apte à tourner librement (120) dans celle-ci, ladite paroi de boîtier (112a) ayant en outre une surface externe (112a") ayant des moyens (300) pour la fixation de ladite unité audit dispositif de distribution d'eau ; ledit boîtier (110) comprenant en outre un socle (114) adjacent audit prolongement de paroi distal (112c) et ayant une partie de bride qui circonscrit ledit prolongement distal (112c) et un fond de boîtier (116) ayant un prolongement globalement circonférentiel défini par ladite surface de paroi interne (112a'), ledit socle de boîtier (114) comprenant en outre une pluralité de buses (118) disposées en au moins deux ensembles de buse (118a), chacun desdits ensembles de buse (118a) comprenant au moins une buse (118), ladite au moins une buse (118) étant alignée le long d'un axe commun par rapport à n'importe quelle buse adjacente (118) dans ledit ensemble de buse (118a) ; ledit boîtier (110) comprenant en outre une pluralité d'orifices de fluide (119) le long dudit prolongement de paroi proximal (112b) de façon à être disposés radialement autour de celui-ci,
- ledit élément de turbine apte à tourner librement (120) qui a une partie de moyeu (122) supportant une pluralité d'aubes (124) par celle-ci, chaque aube (124) ayant une hauteur égale à une hauteur d'une aube successive (124) et un prolongement longitudinal prédéterminé sur un angle prédéterminé, lesdites aubes (124) étant placées dans une succession équidistante le long d'une périphérie de ladite partie de moyeu (122) ; ledit élément de turbine (120) comprenant en outre une paire de languettes de rotor symétriques (126) disposées à une base de ladite partie de moyeu (122) et disposées orthogonalement par rapport à celle-ci, de telle sorte qu'une fenêtre (128) est définie entre des languettes successives (126) pour faire apparaître au moins l'un desdits ensembles de buse (118a) lorsque ledit élément de turbine (120) tourne dans ladite cavité de boîtier (112) ; et
- un élément de coiffe (130) disposé adjacent audit prolongement de paroi proximal (112b) ayant une surface plane externe (130a) et une surface plane interne (130b) définissant ensemble une épaisseur prédéterminée entre celles-ci, ladite surface de coiffe interne (130b) s'étendant à proximité dudit élément de turbine (120) lors de la fermeture de ladite cavité de boîtier (112) par ledit élément de coiffe (130) ;

chaque orifice précité (119) établissant une communication de fluide entre une source de fluide et ladite cavité de boîtier (112) par l'intermédiaire d'un angle d'entrée prédéterminé pour un transport de l'eau le long d'un trajet d'écoulement désigné et une direction consécutive de l'écoulement d'eau pour actionner ledit élément de turbine (120), ledit boîtier (110) et ledit élément de turbine (120) ayant des moyens pour une rotation libre dudit élément de turbine (120) par rapport audit boîtier (110), de telle sorte que lesdites languettes de rotor (126) se déplacent en alignement alterné avec lesdits ensembles de buse (118a) pour une distribution d'eau pulsée à travers ceux-ci

caractérisée par le fait que chaque aube précitée (124) a une courbure telle qu'un rayon interne (R1) de chaque aube précitée est suffisant pour que l'aube prenne une configuration à courbe arrière et un angle d'inclinaison prédéterminé par rapport à une surface tangentielle de ladite partie de moyeu (122).

2. Unité de massage par jet d'eau pulsé (100) selon la revendication 1, dans laquelle lesdits moyens pour la rotation comprennent une ouverture sur l'un dudit boîtier (110) et dudit élément de turbine (120) et un arbre complémentaire sur l'autre dudit boîtier (110) et dudit élément de turbine (120), de telle sorte que ladite ouverture permet une disposition à rotation libre dudit arbre dans celle-ci.

3. Unité de massage par jet d'eau pulsé (100) selon la revendication 2, dans laquelle ledit arbre est un élément cylindrique pendant normalement vers le haut à partir dudit fond de boîtier (116), de telle sorte que ledit arbre est disposé de manière concentrique par rapport à ladite paroi de boîtier (112a).

4. Unité de massage par jet d'eau pulsé (100) selon la revendication 3, dans laquelle ladite partie de moyeu (122) dudit élément de turbine (120) comprend une ouverture cylindrique de diamètre prédéterminé pour l'acceptation dudit arbre de boîtier à l'intérieur de celle-ci et un mouvement libre dudit élément de turbine (120) autour de celui-ci.

5. Unité de massage par jet d'eau pulsé (100) selon la revendication 3, dans laquelle lesdits ensembles de buse (118a) sont définis le long d'axes orthogonaux par rapport audit arbre.

6. Unité de massage par jet d'eau pulsé selon la revendication 2, dans laquelle ledit élément de coiffe (130) comprend une saillie pendant normalement à partir de ladite surface de coiffe interne pour une communication avec au moins l'un dudit élément de turbine (120) et ledit boîtier (110).

7. Unité de massage par jet d'eau pulsé (100) selon la

revendication 1, dans laquelle chaque aube précitée (124) a une épaisseur variable visualisée le long dudit prolongement longitudinal d'aube, ladite épaisseur étant définie par une plage prédéterminée de rayons mesurés à partir d'un axe central commun.

8. Unité de massage par jet d'eau pulsé (100) selon la revendication 1, dans laquelle lesdites fenêtres (128) comprennent de façon souhaitable une surface égale à la surface desdites languettes de rotor (126).

9. Unité de massage par jet d'eau pulsé (100) selon la revendication 1, dans laquelle lesdits moyens de fixation (300) comprennent un ou plusieurs parmi un engagement par friction, un engagement par filetage, un engagement par encliquetage ajusté, un époxy, une configuration à encoche et cavité, une configuration à languette dans rainure ou n'importe quelle configuration équivalente à celles-ci.

10. Unité de massage par jet d'eau pulsé (100) selon la revendication 1, dans laquelle au moins l'un dudit boîtier (110), dudit élément de turbine (120) et dudit élément de coiffe (130) est formé de polyoxyméthylène (POM) ou en un quelconque matériau équivalent.

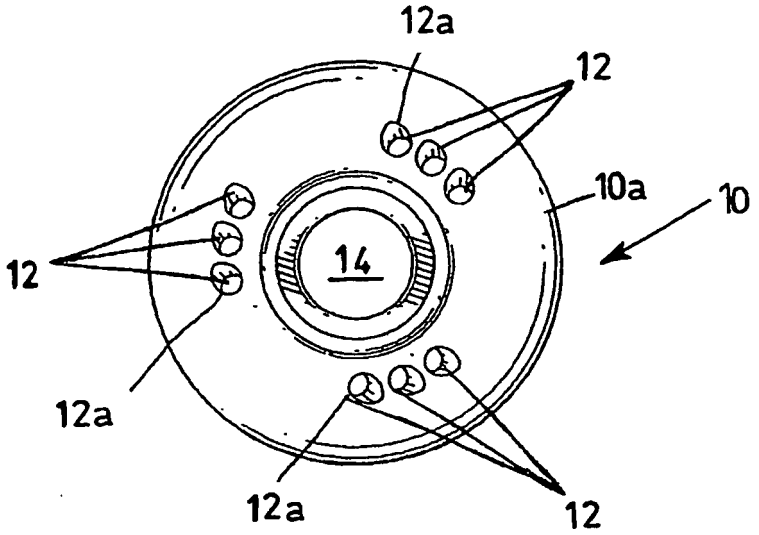


Fig.1
Prior Art

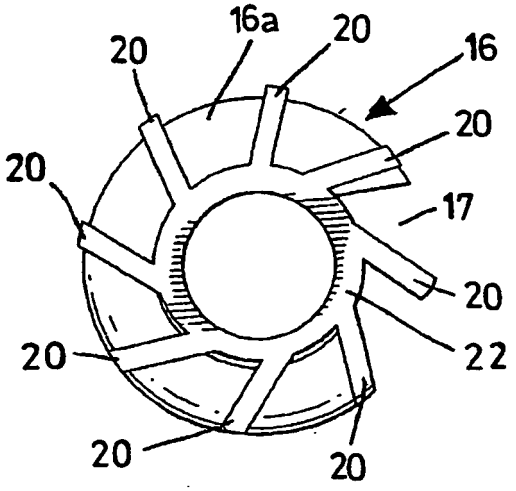


Fig.2
Prior Art

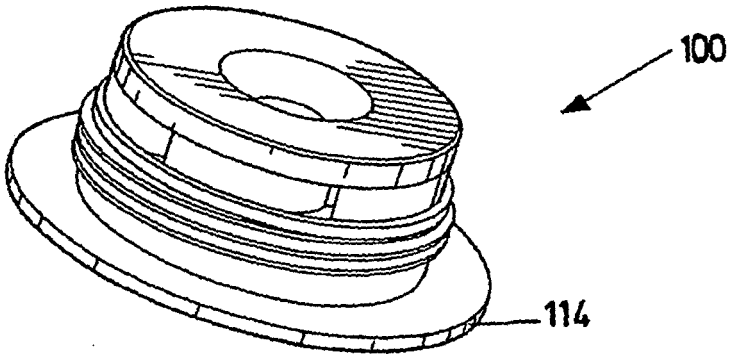

100
114

Fig.3

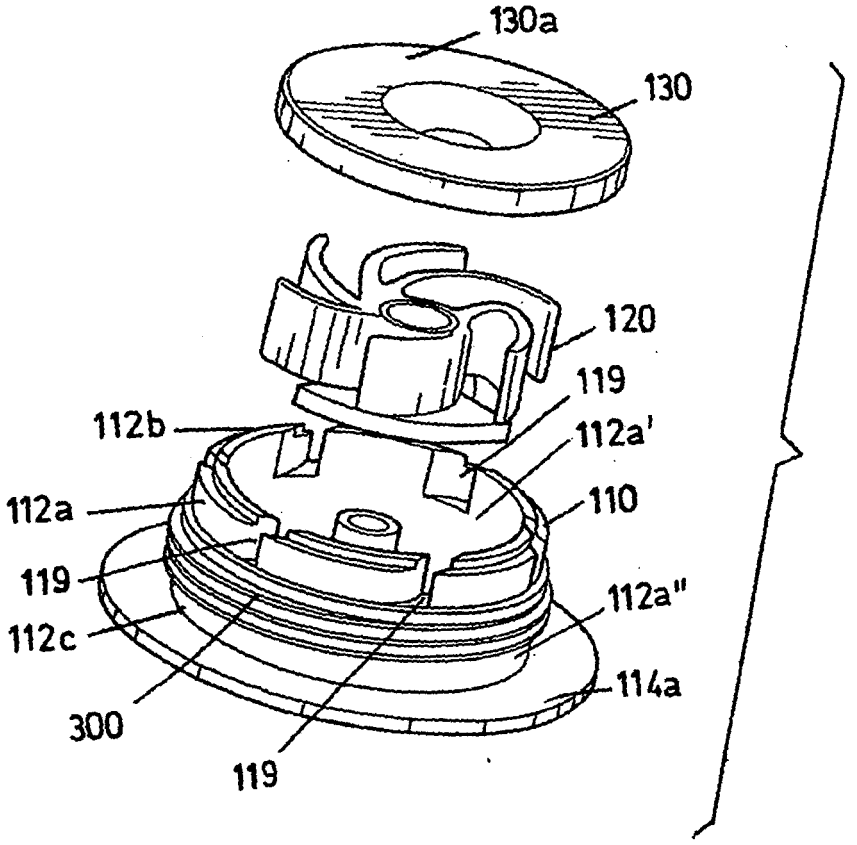

130a
130
120
119
112b
112a'
112a
110
119
112a"
112c
114a
300
119

Fig.4

Fig.5

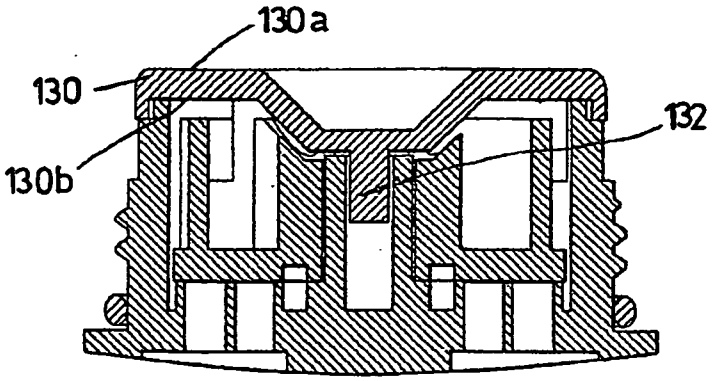


Fig.6

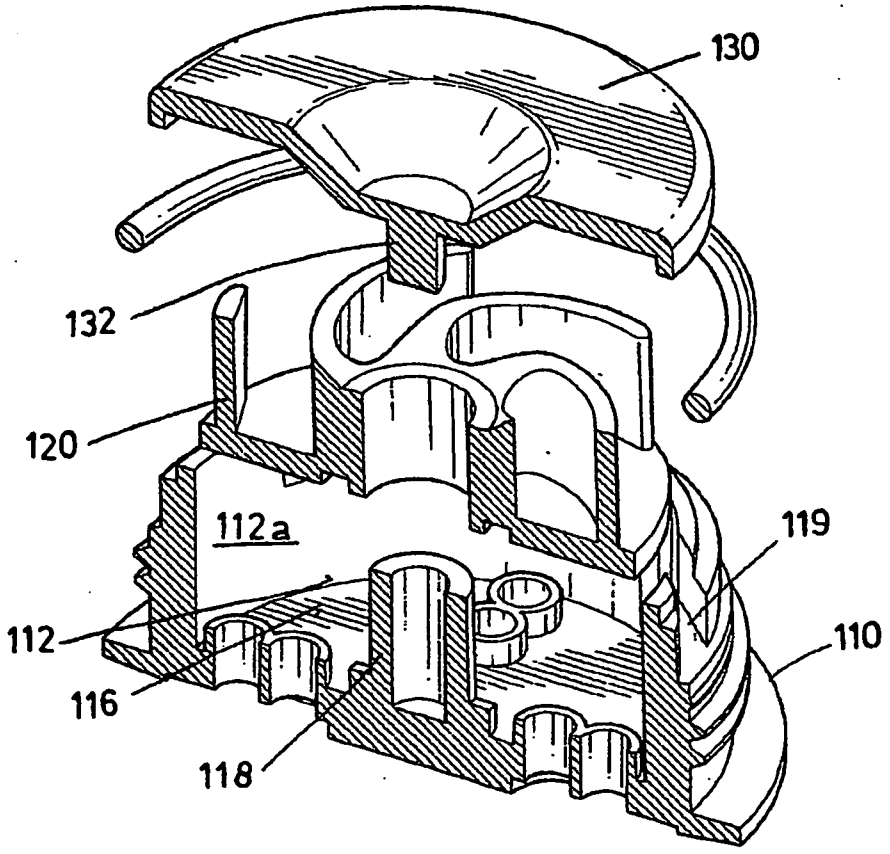


Fig.7

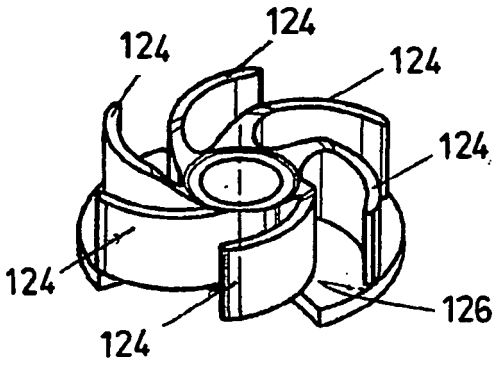


Fig.7(B)

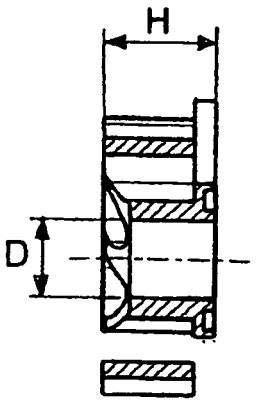


Fig.7(A)

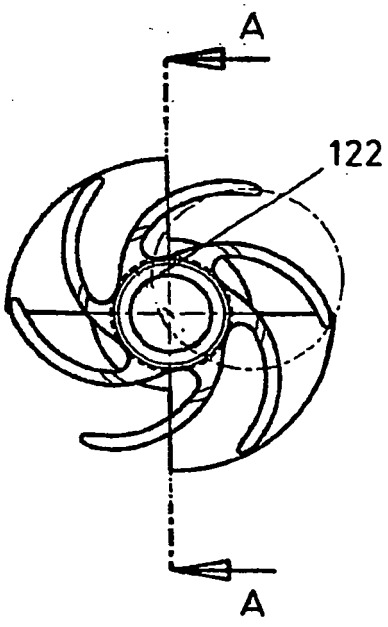


Fig.7(C)

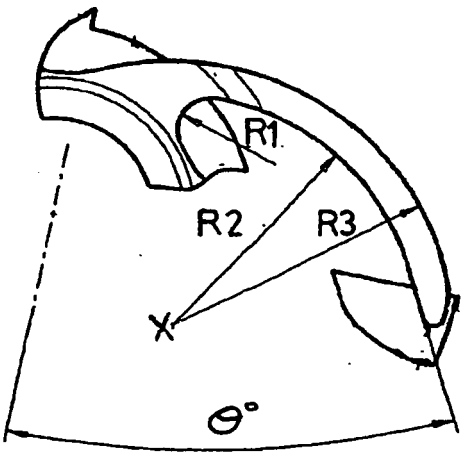


Fig.8

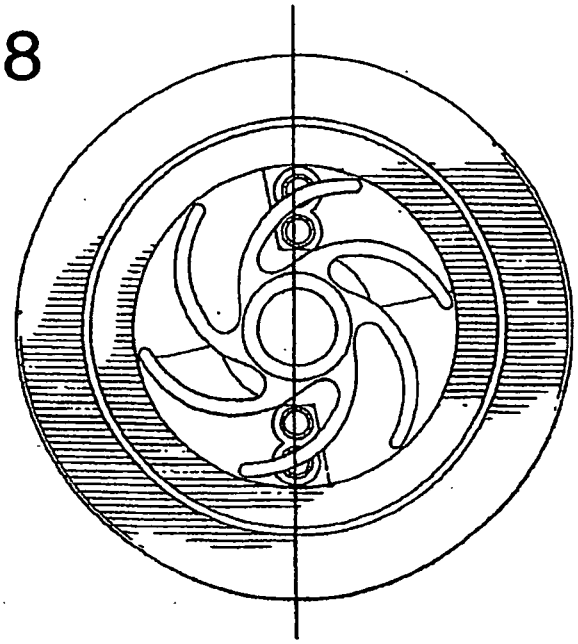
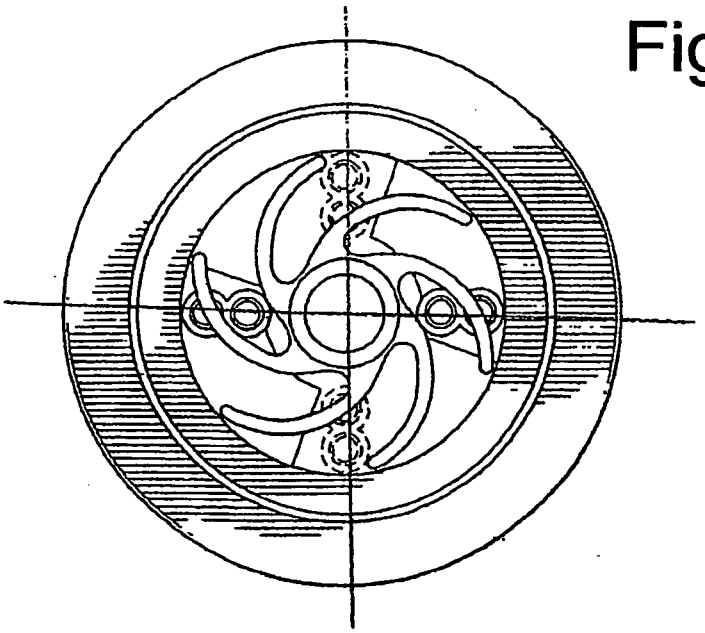


Fig.9



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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