Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).
Description

[0001] The present invention refers to a jet for a shower cubicle of the type with a nebulizing spray and generally arranged on one or more vertical rows along the side wall of a shower cubicle in accordance with the preamble of claim 1.

[0002] Such jet is known from FR-A-2734156 whereas the known jet already allows it to change the type of water spray ejected from the nozzles of the jet by replacing the ejecting nozzle even the end body being fixed to the wall of the cubicle.

[0003] Further it is known from Patent Abstracts of Japan, vol. 018 no. 307 (C-1211), 13 June 1994 (1994-06-13) & JP 06 063455 A, 8 March 1994 (1994-03-08) to arrange an annular body provided with grooves at a jet device similar to such as described within FR-A-2734156 the annular body being arranged inside the annular rim for influencing the ejection of water through the nozzle. The guide grooves being arranged within the annular body forming the nozzle orifice are arranged in a longitudinal direction and shall decrease the peripheral velocity of the outer peripheral part of a water stream passing through the nozzle orifice.

[0004] The purpose of the present invention is that of providing a jet for a shower cubicle having the structural characteristics in accordance with the preamble of claim 1 and allowing determination of the type of water spray with a simple and rational solution.

[0005] Such a purpose is accomplished through a jet for a shower cubicle in accordance with the features of claim 1 especially in accordance with the features of the characterizing part of claim 1.

[0006] The dependent claims outline preferred and particularly advantageous embodiments of the jet for a shower cubicle according to the invention.

[0007] Further characteristics and advantages of the invention shall become clear from reading the following description provided as an example and not for limiting purposes, with the help of the figures illustrated in the attached tables, in which:

- figure 1 shows a section view of a jet for a shower cubicle in accordance with the present invention;
- figure 2 shows an exploded view of the jet of figure 1;
- figures 3 and 4 show a perspective view of a ring for the jet of figure 1, for filiform and nebulizing spray, respectively.

[0008] With reference to the aforementioned figures, a jet for a shower cubicle in accordance with the present invention is globally indicated with 1.

[0009] The jet 1 comprises an end body 2 for supplying water to the shower cubicle, not illustrated.

[0010] The end body 2 has a substantially cylindrical configuration and is provided at one end with an annular rim 3 slightly projecting radially.

[0011] In the illustrated example, the end body 2 has two portions of substantially the same length formed in a single piece through injection moulding: a first portion 2a facing towards the annular rim 3 has an external threading to allow easy fastening to the wall of the cubicle through a ring nut 4 and a second portion 2b suitably shaped to receive a fitting 100, in the example, a one-way fitting, for the water supply ducts, not illustrated.

[0012] The end body 2 is inserted into an inlet hole, with the same diameter as the end body 2, made on the side wall of the shower cubicle until the annular rim 3 goes into abutment against the side wall of the cubicle so as to be entirely facing towards the outside of the cubicle that is, in practice, the part invisible to the user.

[0013] The ring nut 4 is screwed onto the external threading of the end body 2 so as to prevent the displacement of the end body 2 with respect to the wall of the cubicle.

[0014] The second portion 2b of the end body 2 is provided with a through opening 5 for the water coming from the supply ducts. Said opening 5 communicates with a through Channel 6 formed inside the first portion 2a of the end body 2 to as to direct the water inside the shower cubicle.

[0015] In order to ease the assembly of the jet 1, the fitting 100 is of the snap-engagement type. To avoid possible leaks, since the water has a pressure of about 3 bar, close to the outer end of the second portion 2b of the end body 2 and between the first portion 2a and second portion 2b of the end body 2 two grooves 7 are formed along the outer perimeter suitable for forming seats for receiving respective O-rings 8. In addition, it is possible to foresee the use of an outer Seeger 9 arranged at the outer end of the second portion 2b of the end body 2 suitable for ensuring the locking of the fitting 100 according to the prior art.

[0016] Operatively, the fitting 100 is associated with the end body 2 after the ring nut 4 has been screwed onto the first portion 2a of the end body 2.

[0017] In accordance with a preferred embodiment of the present invention, the first portion 2a of the end body 2 can be associated with a removable nozzle 10 provided with a water ejection hole 11.

[0018] The ejection hole 11 is in communication with the through channel 6 so that the pressurised water coming from the supply duct, crossing the opening 5 of the second portion 2b, passes into the through channel 6 to then be ejected through said ejection hole 11 of the nozzle 10 to produce a spray of water inside the cubicle.

[0019] In the illustrated example, the nozzle 10 has a substantially flat circular surface 10a of a size such as to entirely cover the annular rim 3 of the end body 2 visible on the outer wall of the cubicle.

[0020] The ejection hole 11 is situated at the centre of said circular surface 10a.

[0021] On just one side of the circular surface 10a a small hollow cylinder 10b extends, formed in a single piece with the circular surface 10a, provided with threading to allow the small cylinder 10b and, therefore, the
nozzle 10 to be screwed in to the first portion 2a of the end body 2 with prior interposition of a suitable O-ring 12.

[0022] Indeed, the first cylindrical portion 2a of the end body 2 has a corresponding internal threading made in a hollow 13 suitable for receiving the small cylinder 10b of the nozzle 10.

[0023] Basically, the first portion 2a of the end body 2 is a hollow cylinder with an external threading and a threading inside the hollow 13.

[0024] Of course, the hollow 13 is in direct communication with the through channel 6.

[0025] In order to allow easy screwing and unscrewing of the nozzle 10 from the end body 2, the circular surface 10a of the nozzle 10 is provided, on the opposite side to where the small cylinder 10b is present, with a suitably shaped recess 14, in the example with a hexagonal section, to allow a tool to be used, such as an Allen wrench.

[0026] The recess 14 is formed at the ejection hole 11 that is thus arranged on the base of the recess 14. To eject the water from the nozzle 10 in nebulized or filiform form, an annular body 15, called a diffusing ring, is inserted inside the small hollow cylinder 10b of the nozzle 10.

[0027] In greater detail, the diffusing ring 15 is placed in abutment against the ejection hole 10 preferably with a spacer 10c placed in between having a small through channel 16 towards the ejection hole 11 itself. In the example, the spacer 10c is formed in a single piece with the nozzle 10, therefore, in figure 1 just the small channel 16 can easily be distinguished.

[0028] The ring surface 15 opposite the one in abutment has a plurality of grooves 17.

[0029] The shape and arrangement of the grooves on the annular surface of the ring 10 determine the type of water diffusion.

[0030] As an example, grooves 17 arranged radially in pairs describing a helix, as can be seen in figure 3, determine a filiform spray of water, whereas grooves 17 arranged radially one at a time at a constant distance, still describing a helix, as can be seen in figure 4, determine a nebulized-type spray.

[0031] So that the configuration of the ring 15 can effectively determine the type of flow, a pin 18 provided with a doughnut 19, the latter, in the example, integral with the pin 18, is inserted into the small cylinder 10b placing the doughnut 19 in abutment against the ring 15 at the part where the grooves 17 are present and the point of the pin 18 facing towards the small channel 16, as can be seen in figure 1.

[0032] The tail of the pin 18 is arranged inside the through channel 6 coaxially to it ands allows the possible turbulence due to the motion of the pressurised water coming from the pipes to be dampened.

[0033] To allow water to pass through the grooves 17, the doughnut 19 has a smaller circular perimeter than that of the ring 15 (fig. 1). Therefore, to avoid the doughnut 19 and relative annexed pin 18 being able to undergo displacements due to the passage of pressurised water, the doughnut 19 is provided with tabs 20 arranged radially on its perimetric edge, in the example three in number arranged 120° apart.

[0034] The tabs 20, as well as preventing the radial movement of the doughnut 19 and of the pin 18, also prevents their axial movement through technical provisions known in the field, as can be seen in figure 1.

[0035] Basically, the water coming from the opening 5 arrives in the through channel 6 and to go out from the ejection hole 11 it is forced to cross the grooves 17 present on the diffusing ring 15. Should it be wished to change the type of spray generated by the jet 1, it is sufficient to simply replace the ring 15 present inside the nozzle 10.

[0036] As can be appreciated from that which has been described, the jet for a shower cubicle according to the present invention allows the requirements to be satisfied and allows the drawbacks mentioned in the introductive part of the present description with reference to the prior art to be overcome.

[0037] Indeed, the jet for a shower cubicle of the present invention allows the type of water spray ejected by the nozzle to be changed, as well as allowing a possible complete replacement of the nozzle to be carried out through the use of a simple Allen wrench.

[0038] Moreover, said jet for a shower cubicle is simple and cost-effective to manufacture.

[0039] Of course, a man skilled in the art can bring numerous modifications and variants to the jet for a shower cubicle described above in order to satisfy contingent and specific requirements, all of these modifications in any case being covered by the scope of protection of the invention, as defined by the following claims.

Claims

1. Jet (1) for a shower cubicle, suitable for being applied to a side wall of the shower cubicle, comprising:

- an end body (2) for supplying water to the shower cubicle having a through channel (6) for the water, said end body (2) being suitable for being fixed to said wall at an inlet hole for the water into the cubicle;
- fastening means (4) that can be associated with said end body (2) to fix said end body (2) to said wall of the cubicle at the inlet hole;
- at least one supply duct for the water communicating with said through channel (6) of the end body (2);
- a nozzle (10) provided with an ejection hole (11) of the water, said nozzle (10) being in communication with said through channel (6), the pressurised water coming from the supply duct and crossing the through channel (11) being ejected through said ejection hole (11) of the nozzle (10) to produce a water spray inside the
cubicle, said nozzle (10) being removable from said end body (2) allowing it to be replaced, when the end body (2) is fixed to the wall of the cubicle,

classified in that
an annular body (15) provided with grooves (17) is arranged inside said through channel (6) in abutment against said nozzle (10) and a pin (18) is partially inserted inside said annular body (15), said pin (18) being equipped with a doughnut (19) arranged in abutment against said annular body (15) to force the water to radially cross said grooves (17) from the perimetric zone towards the centre.

2. Jet (1) according to claim 1, wherein a plurality of spacer tabs (20) suitable for keeping said doughnut (19) in a fixed position during the passage of the water are radially associated with said doughnut (19).

3. Jet (1) according to claim 1 or 2, wherein said doughnut (19) and said pin (18) are manufactured in a single piece.

4. Jet (1) according to claim 1, wherein said end body (2) is manufactured in a single piece through injection moulding.

Patentansprüche

1. Düse (1) für eine Duschkabine, die zur Befestigung an einer Seitenwand der Duschkabine eingerichtet ist, mit folgenden Bestandteilen:
   - einem Endkörper (2) zur Versorgung der Duschkabine mit Wasser mit einem Durchleitungskanal (6) für das Wasser, wobei der Endkörper (2) zur Befestigung an der Wand der Duschkabine an einer Einlassöffnung für das Wasser in die Kabine eingerichtet ist;
   - Befestigungsmitteln (4), die mit dem Endkörper (2) zusammenwirken können, um den Endkörper (2) an der Wand der Kabine an der Einlassöffnung zu befestigen;
   - wenigstens einer Versorgungsleitung für das Wasser, die mit dem Durchleitungskanal (6) des Endkörpers (2) kommuniziert;
   - einem Auslass (10) mit einer Ausstoßöffnung (11) für das Wasser, der in Verbindung mit dem Durchleitungskanal (6) steht, wobei das unter Druck stehende, aus der Versorgungsleitung kommende und den Durchleitungskanal (11) durchquerende Wasser durch die Ausstoßöffnung (11) des Auslasses (10) ausgestoßen wird, um einen Wassernebel im Inneren der Kabine zu erzeugen, wobei der Auslass (10) von dem Endkörper (2) abnehmbar ist, um eine Auswechslung zu ermöglichen, wenn der Endkörper (2) an der Wand der Kabine befestigt ist,

2. Düse (1) nach Anspruch 1, bei welcher eine Mehrzahl von Abstandshaltern (20) in einer radialen Anlage an der Erweiterung (19) angeordnet ist, um die Erweiterung (19) während des Durchflusses des Wassers in einer festen Position zu halten.

3. Düse (1) nach Anspruch 1 oder 2, bei welcher die Erweiterung (19) und der Stift (18) als ein einzelnes Bauteil hergestellt sind.

4. Düse (1) nach Anspruch 1, bei welcher der Endkörper (2) als ein Einzelteil im Spritzgussverfahren hergestellt ist.

Revendications

1. Jet (1) pour une cabine de douche, approprié pour être appliqué sur une paroi latérale de la cabine de douche, comprenant :
   - un corps d’extrémité (2) pour amener l’eau à la cabine de douche ayant un canal de passage (6) pour l’eau, ledit corps d’extrémité (2) étant approprié pour être fixé sur ladite paroi au niveau d’un trou d’entrée pour l’eau dans la cabine,
   - des moyens de fixation (4) qui peuvent être associés audit corps d’extrémité (2) pour fixer ledit corps d’extrémité (2) sur ladite paroi de la cabine au niveau du trou d’entrée ;
   - au moins un conduit d’alimentation pour l’eau communiquant avec ledit canal de passage (6) dudit corps d’extrémité (2) ;
   - une buse (10) dotée d’un trou d’éjection (11) de l’eau, ladite buse (10) étant en communication avec ledit canal de passage (6), l’eau sous pression provenant du conduit d’alimentation et traversant le canal de passage (11) pour être éjectée par ledit trou d’éjection (11) de la buse (10) afin de produire une pulvérisation d’eau à l’intérieur de la cabine, ladite buse (10) étant amovible dudit corps d’extrémité (2) lui permettant
d'être remplacée, lorsque le corps d'extrémité (2) est fixé sur la paroi de la cabine,

caractérisé en ce que :

un corps annulaire (15) doté de rainures (17) est agencé à l'intérieur dudit canal de passage (6) en butée contre ladite buse (10) et une broche (18) est partiellement insérée à l'intérieur dudit corps annulaire (15), ladite broche (18) étant équipée d'un anneau (19) agencé en butée contre ledit corps annulaire (15) pour forcer l'eau afin de traverser radialement lesdites rainures (17) de la zone périmétrale vers le centre.

2. Jet (1) selon la revendication 1, dans lequel une plurality de languettes d'espacement (20) appropriée pour maintenir ledit anneau (19) dans une position fixe pendant le passage de l'eau, est radialement associée audit anneau (19).

3. Jet (1) selon la revendication 1 ou 2, dans lequel ledit anneau (19) et ladite broche (18) sont fabriqués d'un seul tenant.

4. Jet (1) selon la revendication 1, dans lequel ledit corps d'extrémité (2) est fabriqué d'un seul tenant par moulage par injection.
REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

• FR 2734156 A [0002] [0003]

Non-patent literature cited in the description