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(54) Shower head

(57) A dispensing device for showers is disclosed, of the type comprising an outer casing, a supply pipe for the water and at least one mixing/deflecting chamber, wherein the supply pipe and the mixing/deflecting chamber are made of a single piece.

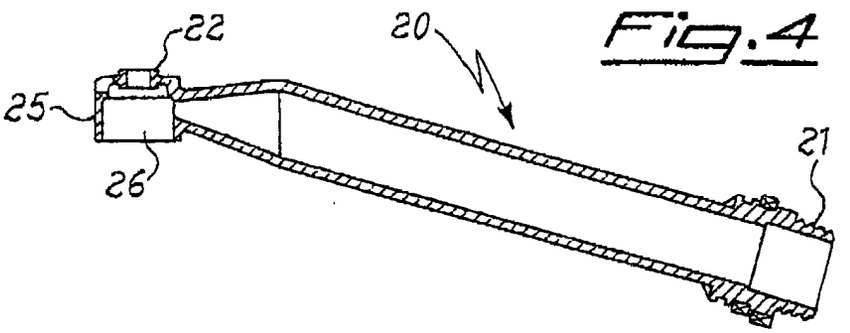

Fig.4

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Description

[0001] The present invention relates to a dispensing device for a shower.

[0002] The water-dispensing devices for showers of the known type generally comprise an outer casing, shaped so as to have a handgrip portion of elongated shape and a head portion which comprises a diffuser member at its outlet end, the diffuser member being provided for enabling the delivery of water through one or more central jets, or else through multiple peripheral jets.

[0003] The selection of the paths towards central or peripheral delivery is made thanks to a deflector operable externally with respect to the casing and acting in a mixing/deflecting chamber in fluid communication with the diffuser member.

[0004] The supply of water to the device and, more in particular, to the mixing/deflecting chamber, is ensured by a supply pipe housed in the handgrip portion of the casing and set in fluid communication with the mixing/deflecting chamber. At the free end of the supply pipe there is generally present a threaded connector projecting from the casing which enables the connection of the device to a flexible pipe.

[0005] However, the dispensing devices for showers so far proposed are particularly complex, both from the point of view of the number of pieces to be assembled and from the point of view of the operations necessary for assembling a large number of pieces together.

[0006] An example of such a known device is disclosed in the European patent application No. EP-A-659490. In this case, the shower dispensing device comprises a cylindrical insert, housed in the head portion of the casing, and provided with an inlet port for the water through which there projects an end of a supply pipe for the water. Seal elements are set in connection between the water supply pipe and the cylindrical insert. The device further comprises a diffuser member, which bears upon the cylindrical insert following upon tightening of a ring nut.

[0007] It may be readily understood that the assembly of all these components (the supply pipe, the cylindrical insert, the sealing elements, the diffuser member, and the ring nut) is very laborious and, consequently, far from advantageous from the economic point of view.

[0008] In addition, the presence of so many pieces may give rise to assembly errors that may jeopardise productivity, as well as make automation of the assembly process impracticable.

[0009] It is moreover evident that the seal elements located between the supply pipe and the cylindrical insert may prove in any case far from effective owing to slight imperfections of assembly, so impairing the reliability and durability of the known dispensing devices.

[0010] In general, the object of the present invention is to provide a dispensing device for showers which is particularly simple and economical to produce.

[0011] Another object of the present invention is to provide a device of the type referred to above which will enable a considerable reduction in the number of pieces necessary for making it.

[0012] Yet a further object of the present invention is to provide a dispensing device for showers which is particularly simple to assemble.

[0013] An additional object of the present invention is to provide a dispensing device for showers which is more reliable over time.

[0014] These objects are achieved by the present invention, which relates to a dispensing device for showers, of the type comprising an outer casing having a handgrip portion and a head portion, at least one supply pipe of the water housed in the handgrip portion, at least one diffuser member located at the outlet end of the water from the head portion and at least one mixing/deflecting chamber located between the supply pipe and the diffuser member in fluid communication with them, characterised in that the supply pipe and the mixing/deflecting chamber are made of a single piece.

[0015] Making the supply pipe and the mixing/deflecting chamber so that they are integral thus limits the number of pieces which have to be assembled to make a dispensing device.

[0016] It is eliminated above all the necessity to insert seal elements at the connection between the mixing/deflecting chamber and the supply pipe, so obtaining a product that is certainly more reliable.

[0017] According to another aspect of the present invention, the head portion of the casing comprises therein a seat designed to receive in engagement a locking portion of the mixing/deflecting chamber.

[0018] The mutually integral mixing/deflecting chamber and supply pipe are advantageously withheld in position by a diffuser member, with the locking portion of the mixing/deflecting chamber housed in the respective seat.

[0019] It may therefore be appreciated that the number of elements to be assembled is considerably smaller with respect to devices of the known art.

[0020] Further characteristics and advantages of the present invention will become more clear from the following description, which is given purely to provide a non-limiting illustration, with reference to the attached drawings, in which:

- Figure 1 is a sectional view of a dispensing device for showers according to the present invention with the means of selection of the jets in a first pre-set position;
- Figure 2 is a sectional view of a dispensing device for showers according to the present invention with the means of selection of the jets in a second preset position;
- Figure 3 is a sectional view of the casing of the dispensing device shown in Figures 1 and 2;
- Figure 4 is a sectional view of the supply pipe, with

an integral mixing/deflecting chamber, of a dispensing device according to the present invention;

- Figures 5A and 5B are enlarged views of a detail of the mixing/deflecting chamber, integral with the supply pipe shown in Figure 4, with Figure 5A which represents a section along the broken plane A-A in Figure 5B;
- Figure 6 is a bottom plan view of a diffuser member of a dispensing device for showers according to the present invention; and
- Figure 7 is a sectional view with respect to the plane VII-VII of Figure 6 of a diffuser member of a device according to the present invention,

[0021] The embodiment described purely by way of example relates to an device for showers designed mainly for installation in a kitchen, but it is of course understood that the principles of the present invention may be applied also to showers for bathrooms. The majority of the elements that make up the device, with the exclusion of the elastic seal rings made of elastomeric materials or the like, are preferably made of plastic materials, but it is of course understood that one or more elements may also be made of different materials, for example metals, composite materials, elastomeric materials, ceramic materials, or the like.

[0022] With reference in general to Figures 1 and 2, a dispensing device for showers according to the present invention comprises essentially an outer casing 10 provided with a handgrip portion 11 and a head portion 12 (see also Figure 3).

[0023] Housed Inside the handgrip portion 11 is a supply pipe 20 which comprises, at one of its ends, a threaded connector 21, projecting with respect to the casing 10, to which is generally connected a flexible pipe (not shown) by means of a suitable threaded ring nut. At the opposite' end with respect to the threaded connector 21 there is provided a mixing/deflecting chamber 25, which appears more clearly visible in Figures 4, 5A and 5B, which is made integrally with the supply pipe 20 and is substantially housed in the head portion 12 of the casing 10.

[0024] The embodiment of the mixing/deflecting chamber 25 in a single piece with the supply pipe 10 enables elimination of all the seal elements which proved necessary in the devices of the known art, and fabrication of a dispensing device that is particularly simple to assemble.

[0025] The integral mixing/deflecting chamber 25 and supply pipe 20 may be obtained according to any possible production technique. For example, in the case in which the chamber 25 and the pipe 20 are made of plastic material, the integral construction may be made by means of techniques of moulding in a single piece, or else by fixing together a number of distinct pieces using techniques of bonding or ultrasound welding.

[0026] A diffuser member 30, represented in greater detail in Figures 6 and 7, is located at the end for the outlet of water from the head portion 12 and is set in fluid communication with the mixing/deflecting chamber 25.

[0027] Provided inside the mixing/deflecting chamber 25 is a shutoff element 40, mounted on a rod 44, which enables deviation of the flow of water coming into the dispensing device for directing the flow along a path which gives out into the diffuser member 30 in a central jet 31 or else along a path which leads to a plurality of peripheral jets 32 (see Figures 6 and 7).

[0028] As may be better noted from Figure 5A, the mixing/deflecting chamber 25 comprises a bottom outlet port 26 which carries the flow of water towards the central jet 31. A plurality of outlet ports 27, more readily visible in the view of Figure 5B, are instead provided on the top part of the mixing/deflecting chamber 25 for conveying the flow of water along a path which gives out into the peripheral jets 32.

[0029] In Figure 1 the shutoff element 40 is represented in the position in which the flow of water is directed towards the central jet 31, whereas in Figure 2 the shutoff element 40 is represented in the position in which the flow of water is directed towards the peripheral jets 32.

[0030] External means 41 and 42 are provided for moving the shutoff element 40 between the positions illustrated in Figures 1 and 2. In particular, the push-button 42, which is integral with the rod 44, enables the shutoff element 40 to be brought from the position of Figure 1 to the position of Figure 2. Once this position has been reached, the pressure of the water delivered by the device is able to keep the shutoff element 40 and the push-button 42 in this position, moreover countering also the force of a return spring (not shown) which tends to bring the shutoff element 40 back into the position of Figure 1. By interrupting the delivery of water, the return spring automatically brings the shutoff element 40 back into the position of Figure 1. The push-button 41 enables instead the push-button 42 to be raised slightly, levering on itself, to move the shutoff element 40 and so reduce on the latter the pressure exerted by the water being delivered. This thus enables the shutoff element 40 to be brought back into the position of Figure 1 without interrupting the delivery of the water.

[0031] According to a particular feature of the present invention, the head portion 12 of the casing 10 comprises therein a seat 15 (Figure 3) which enables a locking portion 22 of the mixing/deflecting chamber 25 to be received in engagement (Figures 4, 5A and 5B). The seat 15 also enables an elastic sealing element 46, for example an O-ring, to be housed therein (Figures 1 and 2) to prevent water coming out of the top part of the device.

[0032] The diffuser member 30, represented in greater detail In Figures 6 and 7, comprises an externally threaded cylindrical portion 33 (Figure 7) which is connected to an internally threaded cylindrical part 13 of the head portion 12 of the casing 10 (Figure 3). An elastic seal ring 37 is housed in a suitable groove of the diffuser member 30 and guarantees the tightness between the

diffuser member 30 and the bottom edge of the head portion 12 of the casing 10.

[0033] The top portion 38 of the diffuser member 30 has a substantially cylindrical shape and an external diameter that is slightly smaller than or equal to the internal diameter of the mixing/deflecting chamber 25. The portion 38, which is equipped with an elastic seal ring 36 housed in a suitable groove, may thus be Inserted in the mixing/deflecting chamber 25 through the port 26. This advantageously enables the mixing/deflecting chamber 25 and the supply pipe 20 to be withheld in position after simple screwing of the diffuser member 30.

[0034] The assembly of the dispensing device is thus particularly simplified. Once the seal ring 46 has been arranged in the seat 15, the integral unit comprising the delivery pipe 20 and the mixing/deflecting chamber 25 are inserted in the casing 10 by the free end of the handgrip portion 11 until the locking portion 22, projecting from the chamber 25, comes to be engaged in the seat 15. After the flow-control buttons 41 and 42 have been mounted, together with the shutoff element 40 on the rod 44, the assembly is completed by the screwing of the delivery member 30 in the head portion 12 of the casing 10.

Claims

1. A dispensing device for showers, of the type comprising an outer casing having a handgrip portion and a head portion, at least one water-supply pipe housed in said handgrip portion, at least one diffuser member located at the outlet end of the water from said head portion and at least one mixing/deflecting chamber located between said supply pipe and said diffuser member in fluid communication therewith, **characterised in that** said supply pipe and said mixing/deflecting chamber ore made of a single piece.

2. A device according to Claim 1, **characterised in that** said diffuser member comprises at least one first outlet path through one or more central jets and at least ;one second outlet path through a plurality of peripheral jets, as well as means operable from outside and acting in said mixing/deflecting chamber for obstructing selectively said first or said second path.

3. A device according to Claim 1, **characterised in that** said diffuser member comprises at least one externally threaded cylindrical part designed to be connected by screwing to a corresponding internally threaded cylindrical part of the head portion of said casing.

4. A device according to Claim 1, **characterised in that** the head portion of said casing comprises therein a seat designed to receive in engagement a locking portion of said mixing/deflecting chamber.

5. A device according to any of the preceding claims, **characterised in that** said mutually integral mixing/deflecting chamber and said supply pipe are withheld in position by said diffuser member, with said locking portion of said mixing/deflecting chamber housed in said seat.

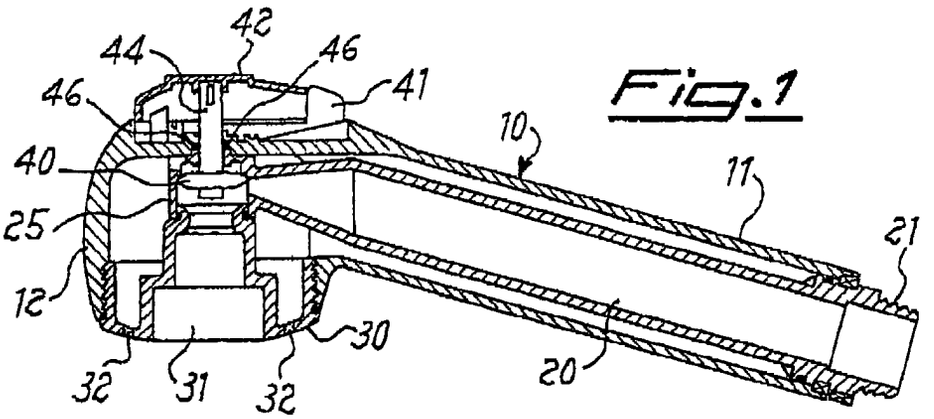


Fig.1

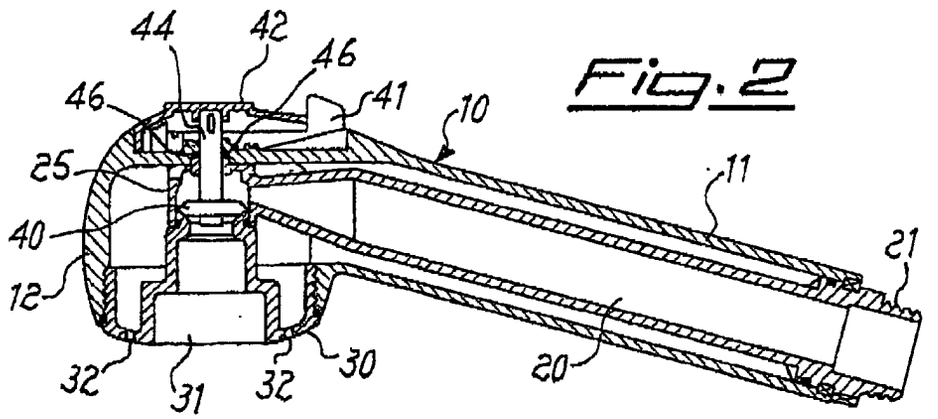


Fig.2

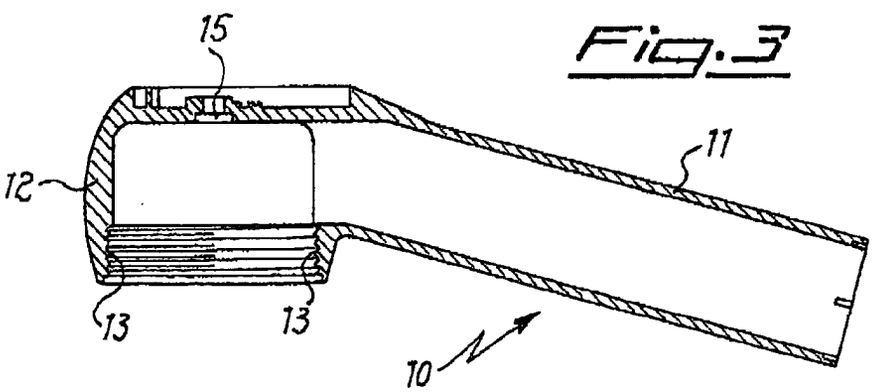


Fig.3

Fig.4

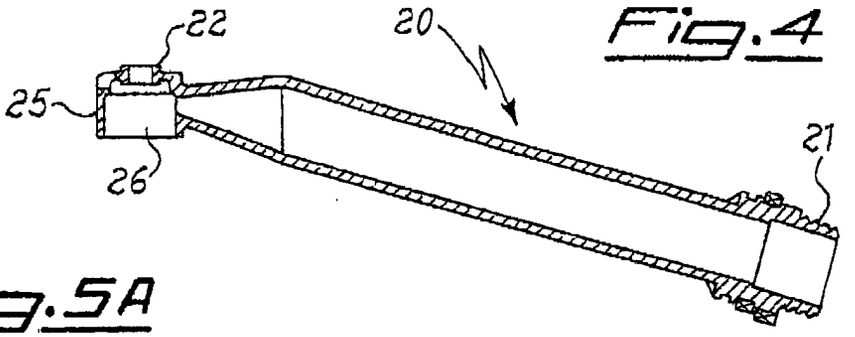


Fig.5A

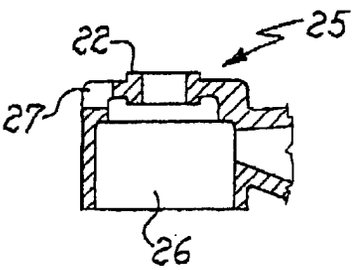


Fig.5B

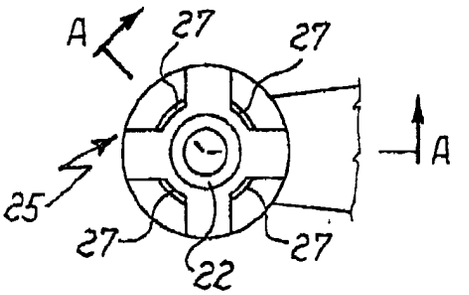


Fig.6

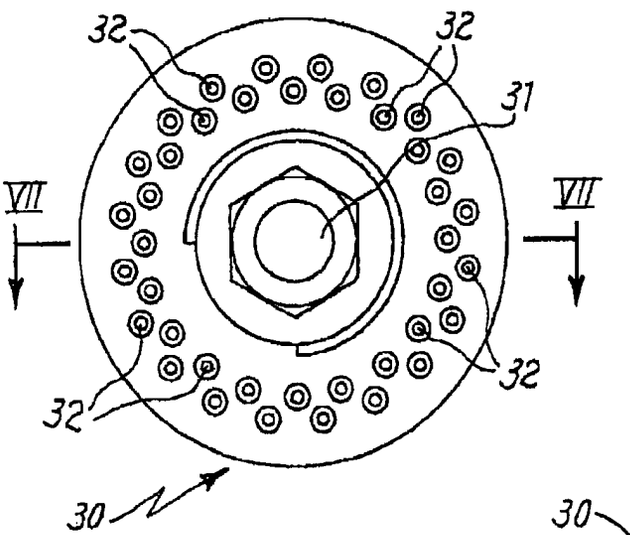
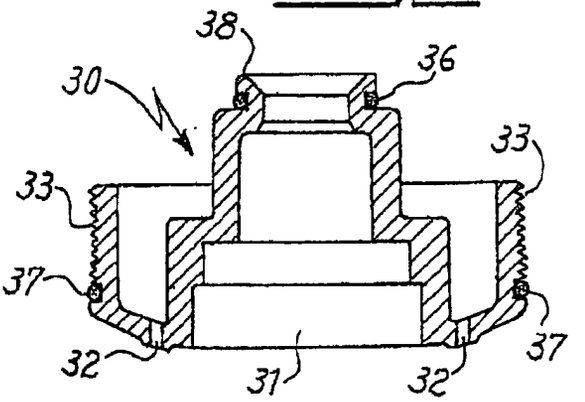


Fig.7



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EUROPEAN SEARCH REPORT

Application Number
EP 01 83 0100

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TECHNICAL FIELDS SEARCHED (Int.Cl.7)
B05B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	27 June 2001	Daintith, E

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