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(54) A distributing device for showers and hydromassage.

(57) A fixed or manual water distributor for showers or similar, comprising an arrangement of Venturi passages for inlet of a second fluid, for example air, said passages being placed in proximity of the distribution section.

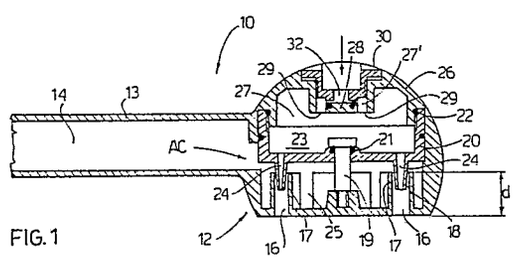

FIG. 1

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Description

A DISTRIBUTING DEVICE FOR SHOWERS AND HYDROMASSAGE

Traditional water distributors for showers are known which comprise a duct which opens externally through a holed disk; such ducts provide a plurality of continuous jets of just water; such jets do not carry out any particular massage on the user's skin.

Devices for showers of the massage type are also known, in which a small disk, the rotation of which is caused by the flow itself, stops and starts the flow when rotating; the intermittent delivery thus carries out a kind of invigorating massage on the user's skin. A disadvantage of such devices is that possible limestone infiltrations can easily block the disk. Furthermore, such devices do not carry out any skin oxygenation.

Showers devices are also known which comprise, in their handle, a single Venturi passage at which an inlet for a second fluid is provided (US 4.193.520) which fluid can be air (US 4.191.332). However this single Venturi is placed considerably far from the distribution section, and the plurality of jets necessary to the distribution is obtained by means of net like components, made of metal or plastics. The jet obtained with such known devices does not carry out an effective hydromassage, since air and water mix together into a flow which is weak, rough and poor of kinetic energy; further air bubbles let into water are subject to crushing in the further path of the flow and when said flow is divided into jets, so that they arrive on the user's skin with poor effectiveness.

According to recent researches, in fact, an hydromassage or water massage effect results from three elements: water pressure, temperature and amount of air mixed in the water. A wrong calibration of such elements nullifies the desired effect. The air bubbles flow must actually be mixed with the water flow, not simply added thereto.

The hydromassage results to be effective when the air violently moved by the water flow is subdivided into a lot of bubbles which break on hitting the skin, therefore releasing oxygen which assists the dilatation of the peripheral vessels. In this way, better and longer effects than the one obtained with a traditional massage are obtained and the continued use assists muscles invigoration, balance of tissues metabolism, a vasodilatory action and an improvement of the peripheral blood circulation.

The aim of the present invention is to avoid the drawbacks of the prior shower distributors and to obtain a multiple jet having qualities suitable to carry out an effect hydromassage.

The above aim has been achieved with a distributing device comprising a head with several distributing holes, which is characterized in that at least some of the holes have a Venturi passage at their delivery outlet and, just downstream of said Venturi, an inlet duct for a second fluid, generally air, said duct communicating with a passage for said second fluid, having an adjustable opening.

According to further characteristics, the distributor comprises a body having tubular projections projecting inwards and defining the distributing holes, a nozzle- or injector-holder element, having nozzles co-operating with said tubular projections so as to form Venturi passages therewith; and a cap having an air feed opening. A chamber for water is defined between said body and said nozzle-holder element and a chamber for the second fluid, generally air, is defined between said nozzle-holder element and said cap.

The new shower distributor effects an hydromassage under optimum conditions; it is not liable to limestone deposits; it can be manufactured at low costs.

The invention will be hereunder better explained with reference to the enclosed drawings, which show exemplary but not limiting embodiments of the distributor, in which

fig. 1 is an axial view through a first embodiment of a shower distributing device;

fig. 2 is a plan view of the device of fig. 1;

fig. 3 is a plan view of a manual distributing device with a ring-shaped head;

fig. 4 is an enlarged view taken along 4-4 in fig. 3;

fig. 5 is an enlarged view taken along 5-5 in fig. 3;

fig. 6 is a plan view of a third type of shower distributing device;

fig. 7 is an enlarged sectional view along 7-7 of fig. 6;

fig. 8 is an enlarged sectional view along 8-8 of fig. 6.

A shower distributing device, generally refenced 10 in fig. 1 and 2, comprises a shower body 12, integral to a tubular handle part 13 with inner channel 14. The body, which is internally hollow, is provided with distribution or delivery openings 16, each one surround by a tubular part 17 extended inwards. An insert or injector holder element 20, which is tightly sealed by a ring 21 against a shaft 19 and a sealing ring 22 against the body 12, is positioned and fixed, in a suitably spaced position on the body 12, by means of threaded shaft 19. The insert 20 has a substantially cylindrical shape from which tapered wall nozzles or injectors 24 extend in a position corresponding to the cylinders 17 of the body. When the insert is mounted on the body, and injector is arranged in a respective cylinder from which it remains spaced, a Venturi passage 18 being formed between the outer part of the injector and the inner wall of the cylinder. Of course it is not necessary for the parts 17 to be cylindrical and for the nozzles 24 to be conical, provided that a Venturi passage is formed between them. A cap 26 is screwed on the insert 20 and has a lower cavity 27 and an upper cavity 27′, with an at least partially threaded wall, provided at the bottom with an abutment wall 28 at the sides of which through openings 29 are formed. A plug 30, provided with a hole 32 at the bottom, is engaged on the threading of the cavity 27′. The plug

30 is movable on the threading between a lowered position against the wall 28, wherein it closes the hole, and various adjustably open positions. A chamber 23 for air or other second fluid is formed between the cap 26 and the element 20. A chamber 25 for water, in communication with the channel 14, is formed between element 20 and body 12.

The operation of the device 10 will be briefly explained. When water, or however a first fluid, is distributed through channel 14, chamber 25, Venturi passages 18 and hole 16, the depression which is created at the passage in 18 sucks in air or the second fluid possibly present in the chamber 23. The air is mixed with water into a turbulent flow. The air flow is adjusted or shut off by controlling the plug 30.

It should be noted that a Venturi is provided on each distribution hole and, for each distribution hole, at a fairly small distance "d" from the distribution or delivery section. A preferred distance "d" is between 10 and 15 mm. It has been observed that in this way an air-water mixture with optimum features for an hydromassage is provided.

A different embodiment of the distributing device is shown in figs. 3-5 and referenced 100.

The distributing device 100 in figs. 3, 4, 5 is screwed on the handle 113 having a water supply channel 114 and comprises a ring-shaped body 112, an annular nozzle holder element 120, an annular cover 126. The body 112 has circumferentially spaced distributing holes 116, extended on the inside by tubular parts 117. Element 120 has nozzles 124 at the holes 116. An annular water chamber 125 is formed between parts 112 and 120, and is in communication with channel 114. An annular chamber 123 for air or second fluid is formed between the element 120 and the closing ring 126 and is in communication with a part 129, the opening of which can be controlled by a slidable ring nut 130. The air which is in chamber 123 is sucked in owing to the depression created in the Venturis 118 between the inner wall of the parts 117 and the nozzles 124. A mixed air/water distribution is provided from the holes 116.

Such mixed distribution is optimum for a distance "d" = 10-18 mm between the narrow section of the Venturi and the distribution section.

A further embodiment of the distributing device is shown in figs. 6, 7, 8 and indicated with 200. The device 200 comprises a ring-shaped body 212, an annular nozzle-holder element 220 and an anular cover 226. The body and the nozzle-holder element are integral to a handle having a channel 214 for feeding water and a parallel channel 215 for feeding air or a second fluid. The body 212 has circumferentially spaced distribution holes 216, which are internally and externally extended by tubular parts 217, 217'. The nozzle-holder element 220 has nozzles 224 at the holes 216; a toric chamber 225 for water is formed between parts 212 and 220; a toric chamber 223 for air or second fluid is formed between parts 220 and 226, in communication with a port 229 communicating with the channel 215 and adjustable by means of a shutter 230 integral to a slider 231. The air in the chamber 223 is sucked in through channel 215 owing to the depression created in the Venturi passages 218 between the inner wall of parts 217 and the nozzles 224.

The device 220 may be provided with a bush 250 on each nozzle, which acts as a flow guide or water guide, as well as with a top shell 252 and, if desired, with a pressure fitted removable distributor ring 260, having openings 262.

Though only distributing devices have been described which have an annular arrangement of the distribution hols and annexed Venturi passages, the scope of the present invention is meant to comprise also devices with several distribution holes (and relevant Venturi passages) anyhow arranged.

Claims

1. A shower distributing device comprising: a body; feed channels for a first fluid; a feed passage for a second fluid; distribution holes for delivering a mixture of said two fluids; a Venturi passage having an inlet nozzle for said second fluid therein, characterized in that it comprises a plurality of Venturi passages (18, 118, 218) with relevant inlet nozzles, each one placed at one of said distribution holes (16, 116, 216), at a short distance from the distributing section thereof.

2. A device according to claim 1, characterized in that said short distance is between about 10 and 18 mm.

3. A device according to claim 1, characterized in that said distributing holes (16, 116, 216) are circumferentially annularly arranged.

4. A device according to claim 1, characterized in that said distributing holes (16, 116, 216) are formed in a body part (12, 112 212) of the device; said nozzles (24; 124; 224) are integral to a nozzle-holder element (20, 120, 220) of the device; said Venturi passages (18; 118; 218) are formed between each tubular part (17; 117; 217) integral to the distributing hole and each nozzle (24; 124; 224); a chamber (25; 125; 225) for said first fluid being defined between said body and said nozzle-holder element; a chamber (23, 123, 223) for said second fluid being defined between said nozzle-holder element and a further element, cover or the like.

5. A device according to claim 4 characterized in that said second fluid is air and said chamber for the second fluid is in communication with the outside through an adjustably closable opening.

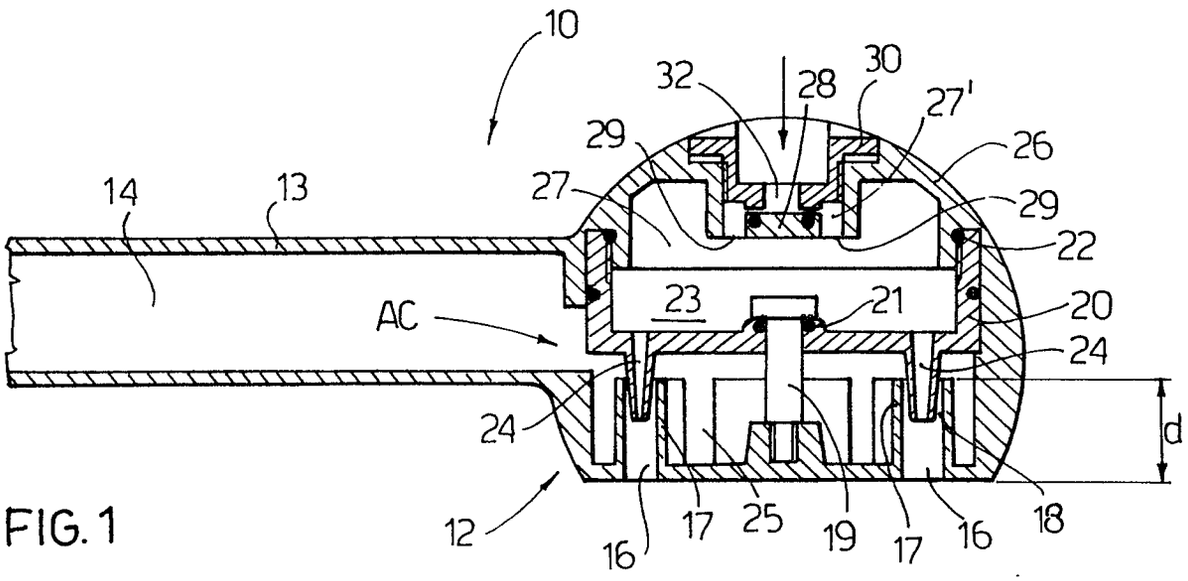

FIG. 1

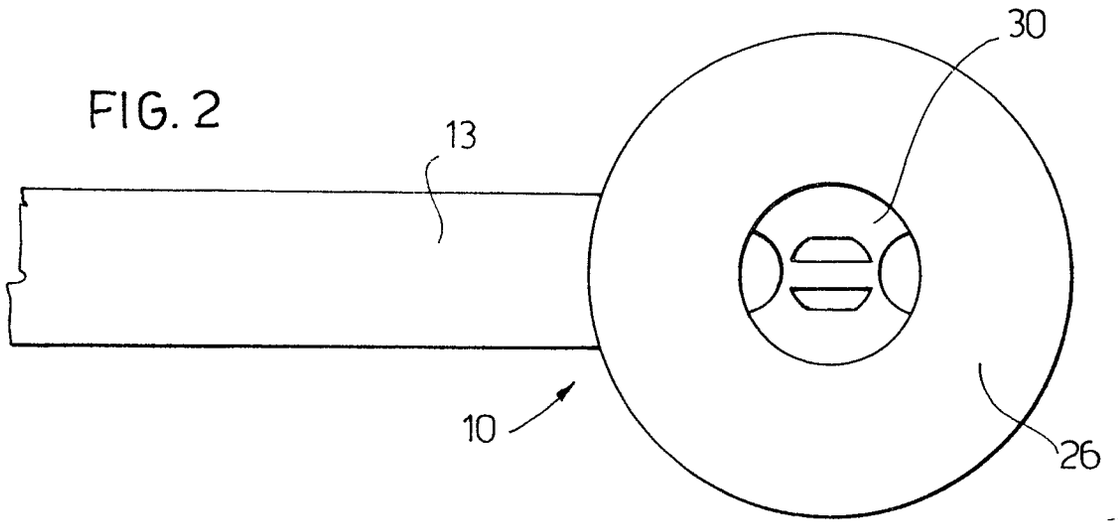

FIG. 2

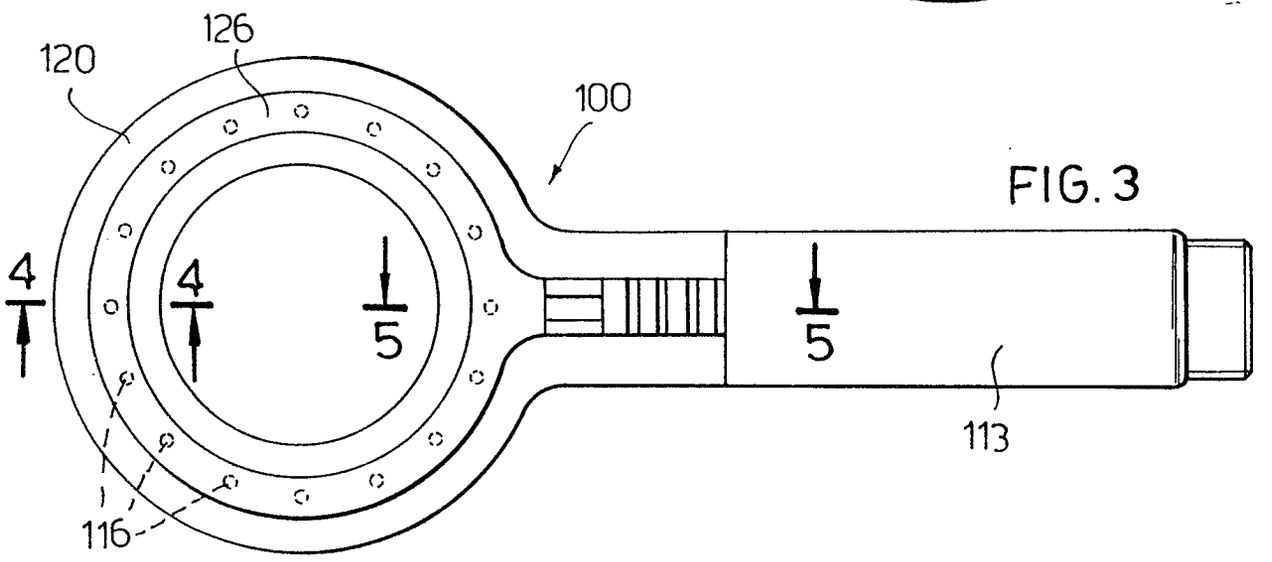

FIG. 3

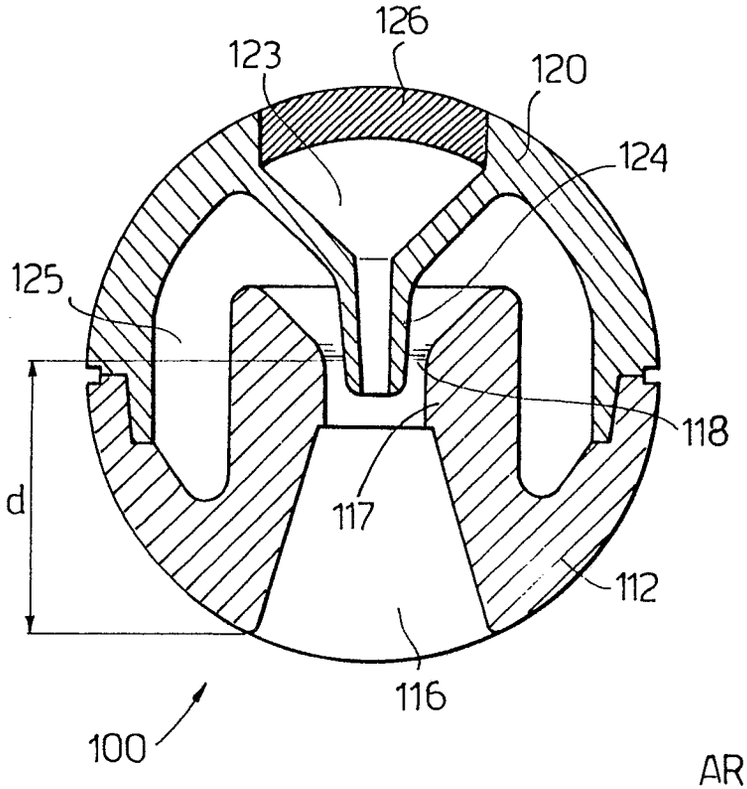

FIG. 4

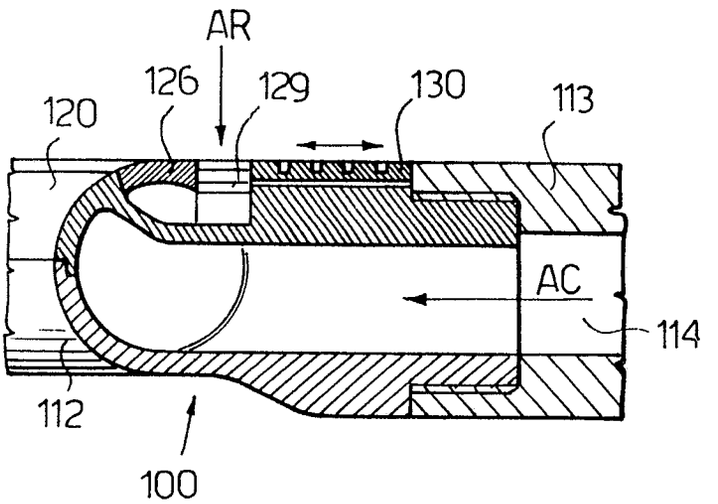

FIG. 5

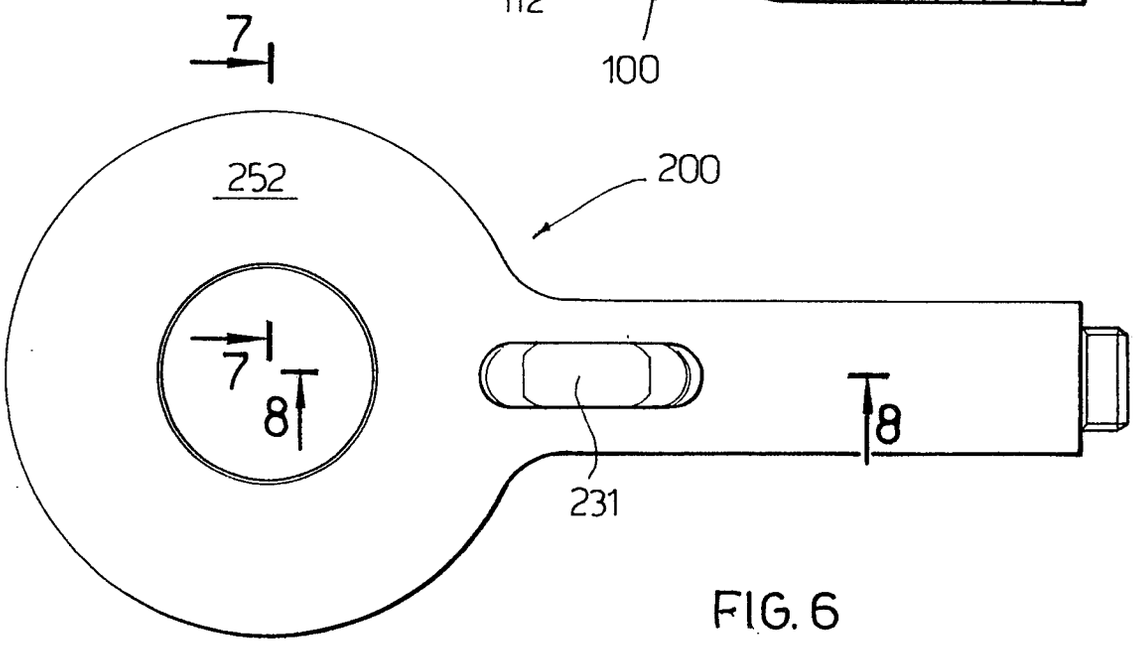

FIG. 6

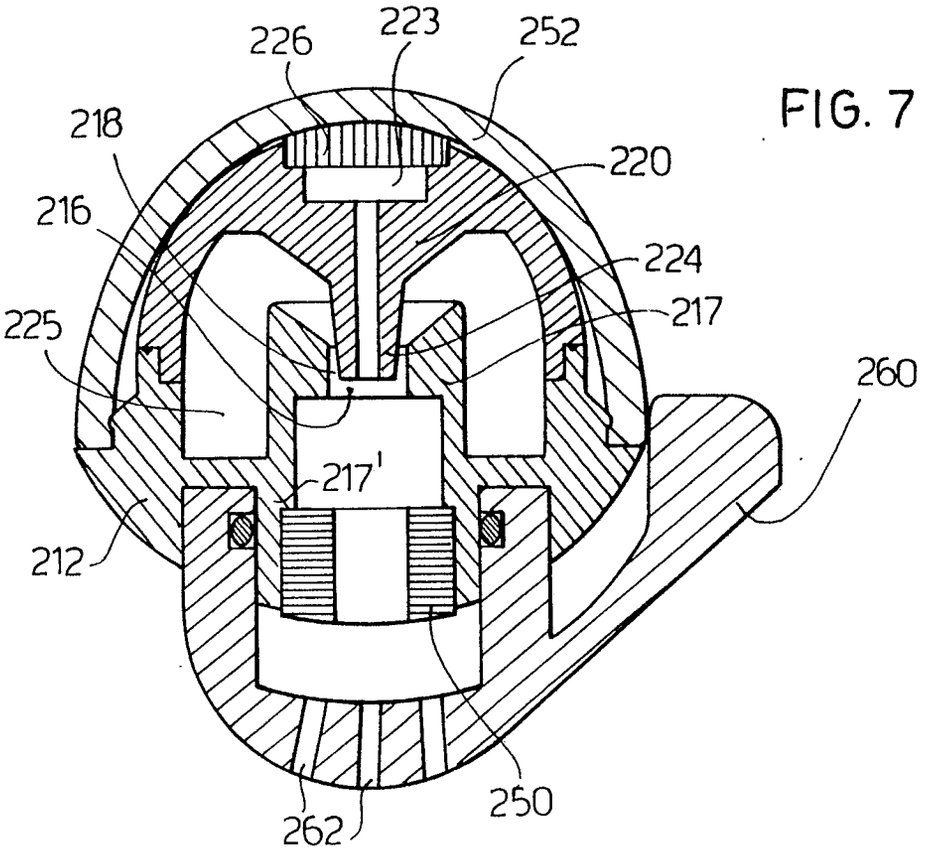
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FIG. 7

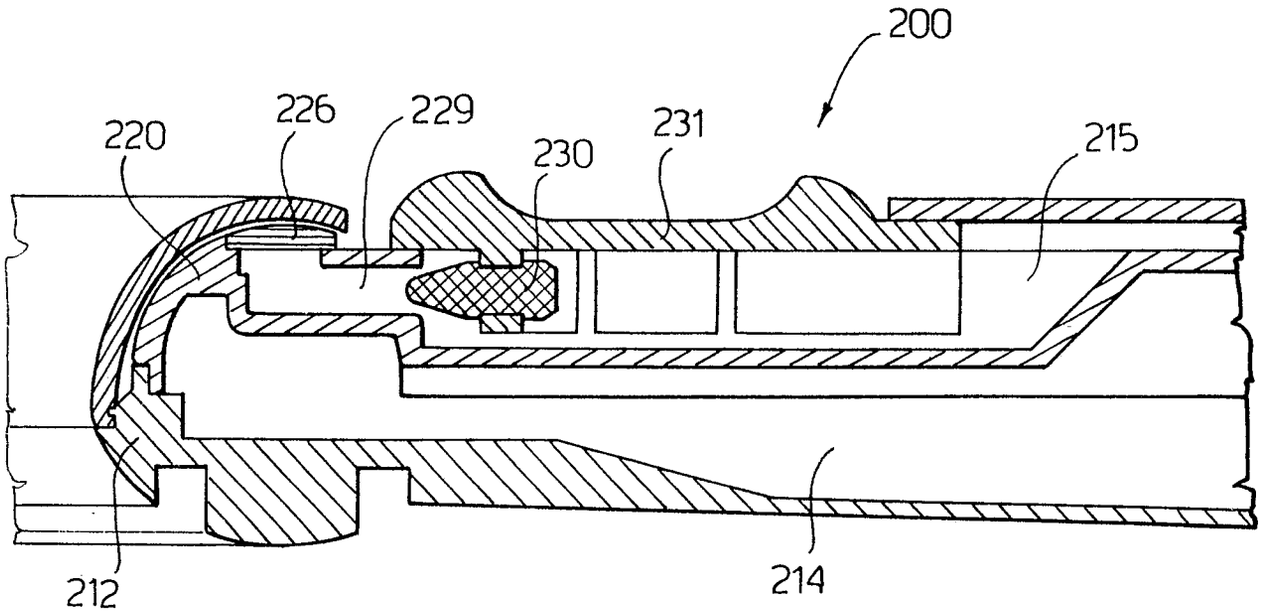
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FIG. 8