(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 169 450**
A2

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **85108664.5**

(51) Int. Cl.⁴: **E03C 1/046**

(22) Date of filing: **11.07.85**

(30) Priority: **27.07.84 IT 2210784**

(43) Date of publication of application:
29.01.86 Bulletin 86/05

(84) Designated Contracting States:
CH DE FR GB LI NL SE

(71) Applicant: **Caldi, Sergio**
Via Fucine 42
I-28026 Bagnella di Omegna(IT)

(72) Inventor: **Caldi, Sergio**
Via Fucine 42
I-28026 Bagnella di Omegna(IT)

(74) Representative: **Modiano, Guido et al**
MODIANO, JOSIF, PISANTY & STAUB Modiano & Associati Via Meravigli, 16
I-20123 Milan(IT)

(54) Device for delivering water admixed with a detergent liquid, particularly for hygiene and sanitation applications.

(57) The device for delivering water admixed with a detergent liquid, includes a shower dispenser (1) and is characterized in that it comprises a detergent liquid reservoir (4) in communication with a channel (5) adapted for conducting water to the reservoir (4) and to a delivery end (3) of the shower dispenser (1). The device further comprises a means of connecting the cited reservoir to the delivery end of the shower dispenser.

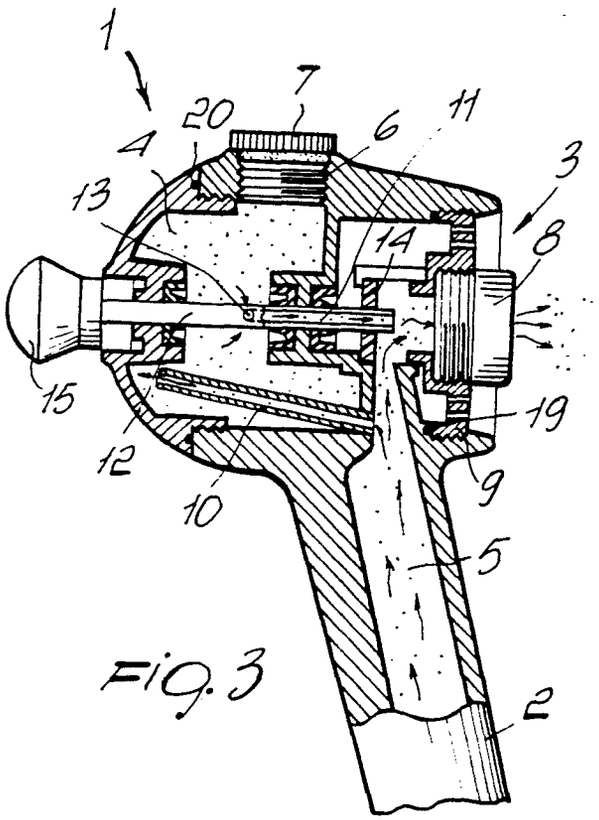

Fig. 3

EP 0 169 450 A2

"DEVICE FOR DELIVERING WATER ADMIXED WITH A DETERGENT LIQUID, PARTICULARLY FOR HYGIENE AND SANITATION APPLICATIONS"

This invention relates to a device for delivering water admixed with a detergent liquid, particularly for hygiene and sanitation applications.

Known, in the field of hygiene and sanitation appliances, are shower dispensers having a hand-grip to facilitate their use, and which deliver water through a small plate having a plurality of holes for providing a shower dispensing mode.

Also known are shower dispensers incorporating devices, commonly termed "aerators", which are connected to the ends of a dispenser to provide for the delivery of mixed water and tiny air bubbles.

Furthermore, devices are known for delivering scented water, which generally consist of dispensers wherein a suitable seat is provided in contact with the water for the introduction of solid flavouring tablets which dissolve slowly on delivery.

Such dispensers, while generally showing no disadvantages regarding their ordinary use, are unsuited to dispense mixed water and soap.

It is the primary aim of this invention to provide a device which can deliver water admixed with a detergent liquid for washing the skin with soft detergent lather and such as to enable a uniform distribution of the lather such as was produced in the past by rubbing the soap over the skin.

Within the above aim, it is an object of this invention to make a person's washing operation more pleasant by arranging for the distribution of lather under a slight pressure, which can later be rubbed against one's skin by means of a sponge or otherwise for proper hygiene.

The above aim, and these and other objects, are achieved by a device for delivering water admixed with a detergent liquid, particularly for hygiene and sanitation applications, including a shower dispenser, characterised in that it comprises a detergent liquid reservoir in communication with a channel for feeding water into said reservoir and to a delivery end of said shower dispenser, a means being provided for connecting said reservoir to said delivery end.

Further features and advantages of the invention will become apparent from the description of some preferred but not exclusive embodiments of the inventive device, with reference to the accompanying illustrative drawings, where:

Figure 1 is a perspective view of a first embodiment of the device according to the invention;

Figure 2 is a front elevation view of a first embodiment of the device of this invention;

Figure 3 is an enlarged sectional view of part of Figure 2 taken along the line III-III, showing the inventive device during a first operation phase;

Figure 4 is an enlarged sectional view of part of figure 2 taken along the line III-III and showing the inventive device during a second operation phase;

Figure 5 is a section taken similarly to Figures 3 and 4 of a second embodiment of the device according to the invention;

Figure 6 is a section taken similarly to Figures 3 and 4 of a third embodiment of the inventive device;

Figure 7 is a section taken similarly to Figures 3 and 4 of a fourth embodiment of the inventive device; and

Figure 8 is a section taken similarly to Figures 3 and 4 of a fifth embodiment of the inventive device.

With reference to the drawing figures, the device o this invention comprises a shower dispenser, generally designated with the reference numeral 1, which has a handgrip 2 for handling convenience in use, and a delivery enc 3.

Internally of the shower dispenser 1 there is provided, according to the invention, a detergent liquid reservoir 4 which is in communication with a channel 5 for feeding water both to the reservoir and delivery end 3.

The reservoir 4 is also in communication with the outside through an opening 6 which may be shut off by means of a removable plug 7 to allow filling with a detergent liquid.

With particular reference to Figures 1 to 4, the delivery end 3 comprises an aerator 8 for delivering lather and a small plate 9, which extends externally of an coaxially with the aerator and has a plurality of water delivery holes.

The reservoir 4 is in communication with the channel 5 through a small tube 10, which extends internally of the reservoir, and with the delivery end 3 through a conduit 11 carried on the interior of a small shaft 12, which communicates with the reservoir through a hole 13 and opens in the proximity of the delivery end 3.

Advantageously, the small shaft 12 is movable parallel to its own axis from an open position, whereat the hole 12 is located inside the reservoir and can, therefore, supply the detergent liquid to the delivery end, to a closed position whereat the hole 8 is brought to the exterior of the reservoir so as to shut off the delivery of detergent liquid.

Expediently, moreover, the small shaft 12 carries close to the delivery end a switch gasket 14 which, is moving with the small shaft between two abutments, causes in these two positions water to be conveyed respectively either to the aerator or the small plate.

The small shaft 12, and hence the conduit 11, which constitute the means for connection according to this invention, are controlled from the outside of the shower dispenser through an actuating knob 15 which is rigid with the small shaft 12.

Of course, sealing gaskets are provided, respectively 16,17 and 18, to prevent the detergent liquid from leaking toward the delivery end. Also provided are more gaskets 19 and 20 to prevent external leaks in operation.

With reference to Figure 5, the small shaft 12 is actuatable from the outside by turning a movable end 21 of the shower dispenser, thereby, motion is transmitted to the small shaft through a screw nut 22, carried on the movable end, which engages with a thread. 23 carried on the small shaft 12.

In the embodiment shown in Figure 6, switching is achieved by splitting the channel 5 into two secondary channels, 24 and 25 respectively, of which one is in communication with the reservoir 4 and the other is in communication with the delivery end 3. Close to the split point, there is provided a switch valve 26 which admits water to only one of the two secondary channels to provide for the

delivery of either water or lather. In this case, the connection means according to the invention comprises a small fixed cylinder 27 through which there extends an internal conduit 28.

In the embodiment shown in Figure 7 switching is accomplished by turning the head of the shower dispenser, and accordingly, two delivery ends are provided which operate alternatively. In this case, the small tube 10 is replaced with the intake 29 which may be shut off by the rotation because it is located offcentered with respect to the axis of of fixed pin 30 about which the head 31 of the dispenser is rotatable.

In this case, the means for the connection according to this invention comprises the curved tube 32.

In the embodiment shown in Figure 8 no switch positions are provided, but there occurs the delivery of lather until the detergent liquid is exhausted and accordingly, the means for the connection according to the invention comprises merely a connection pipe 33.

The operation of the device according to the invention is apparent from the foregoing description. With reference to Figures 3 and 4, after the reservoir 4 is filled with detergent liquid the reservoir is closed and the dispenser is ready for use.

Holding the knob 15 at the position shown in Figure 3, water will enter the reservoir from the channel 5 and a small tube 10 and pressurise the detergent liquid becoming mixed with it.

A slight negative pressure occurs at the delivery end owing to the presence of the aerator 8 which draws air from the outside, and therefore, the detergent liquid admixed to water will flow through the hole 13 and reach the delivery end where it is further admixed to water and air, thus forming the lather which is delivered from the aerator.

When the delivery of lather is to be discontinued it will be sufficient to operate the actuating knob and thus avoid connecting the reservoir to the delivery end. In this case, the movement of the switch gasket 14 causes the water flow issuing from the holes in the small plate 9 to be deflected.

In the other embodiments, switching, except in the type shown in Figure 8 which is not provided with it, takes place either by turning the movable end 21 (Figure 5) or operating the switch valve 26 (Figure 6) or turning the head 31 of the dispenser (Figure 7).

It has been found in practice that the device of this invention enables automatic mixing of the outflowing water with such detergent liquids as shampooes, liquid soap, bath gel, etc., it being possible to discontinue the delivery of lather and only admit water for delivery.

The invention herein is susceptible to many modifications and changes without departing from the purview of the inventive concept. Thus, as an example, it would be possible to replace the small tube 10 with a simple intake equipped with a check valve. Furthermore, all of the details are replaceable with other technically equivalent elements.

In practicing the invention, any materials, and dimensions, may be used contingent on requirements and the state of the art.

Claims

1. A device for delivering water admixed with a detergent liquid, particularly for hygiene and sanitation applications, including a shower dispenser (1), characterised in that it comprises a detergent liquid reservoir (4) in communication with a channel (5) for feeding water into said reservoir (4) and to a delivery end (3) of said shower dispenser (1), a means being provided for connecting said reservoir to said delivery end.

2. A device according to Claim 1, characterised in that said reservoir (4) extends internally of said shower dispenser.

3. A device according to Claim 1, characterised in that said reservoir (4) is in communication with the outside through an opening which may be shut off by a removable plug (7).

4. A device according to Claim 1, characterised in that said reservoir (4) is in communication with said water feed channel (5) through a small tube (10) extending internally of said reservoir (4).

5. A device according to Claim 1, characterised in that said means of connecting said reservoir (4) to said delivery end (3) comprises a conduit (11) carried on a small shaft (12) extending from said reservoir (4) to said delivery end (3).

6. A device according to Claim 5, characterised in that said small shaft (12) is movable parallel to its own axis from an open position, whereat said conduit (11) is simultaneously communicated with said reservoir (4) and said delivery end (3), to a closed position whereat said conduit (11) is only communicated with said delivery end (3).

7. A device according to Claim 6, characterised in that said small shaft (12) is integrated to an actuating knob (15) carried on the exterior of said shower dispenser (1).

8. A device according to Claim 6, characterised in that said small shaft (12) has its opposed end (23) to said delivery end (3) threaded and engaged with a screw nut (22) carried on one pivotable end (21) of said shower dispenser (1).

9. A device according to Claim 1, characterised in that said shower dispenser (1) has two delivery ends alternatively communicated with said water feed channel (5) or jointly with said water feed channel (5) and said detergent liquid reservoir (4).

10. A device according to one or more of the preceding claims, characterised in that said delivery end (3) comprises an aerator (8).

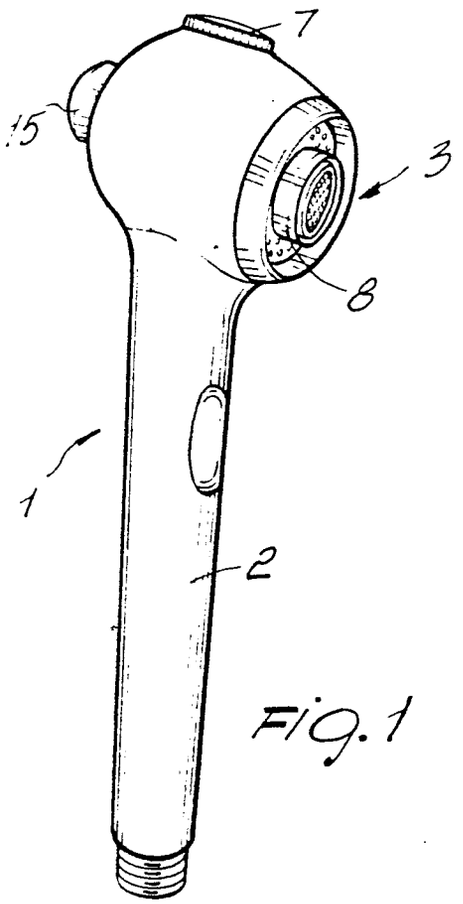

Fig. 1

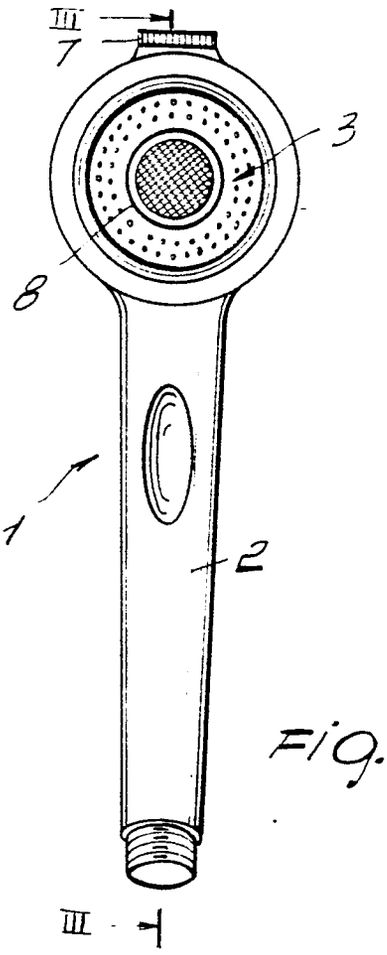

Fig. 2

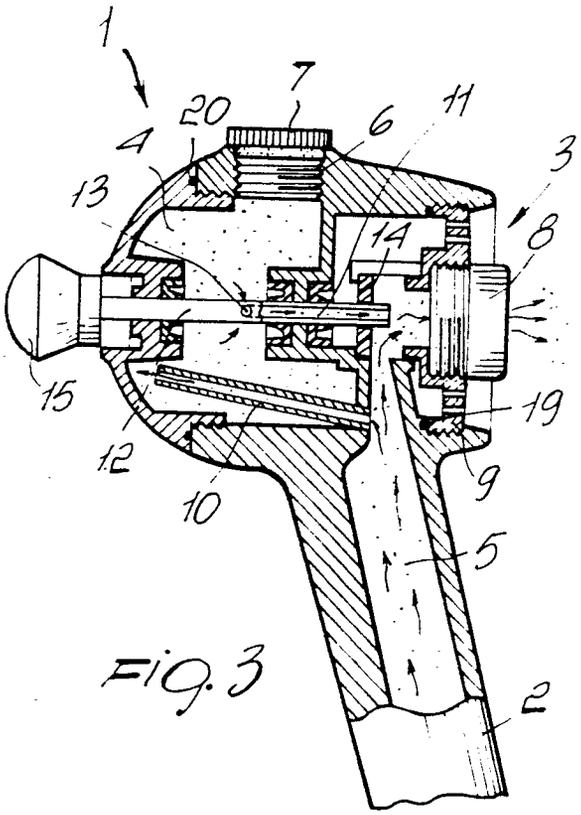

Fig. 3

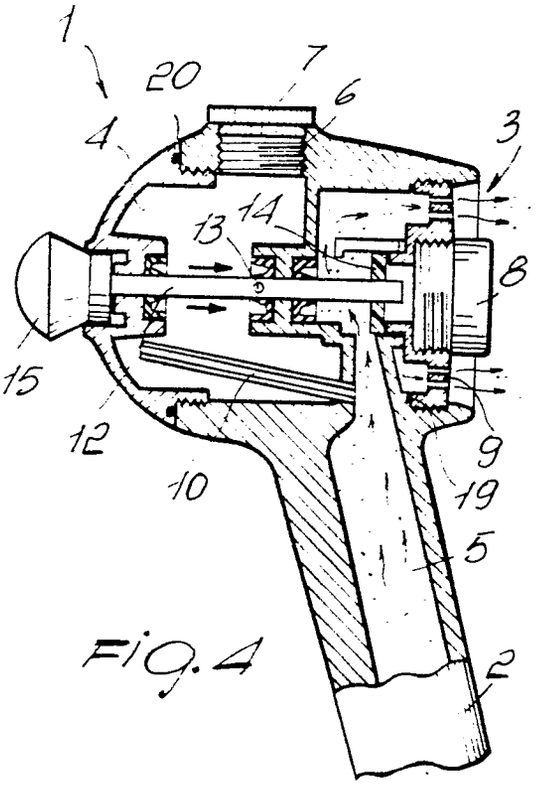

Fig. 4

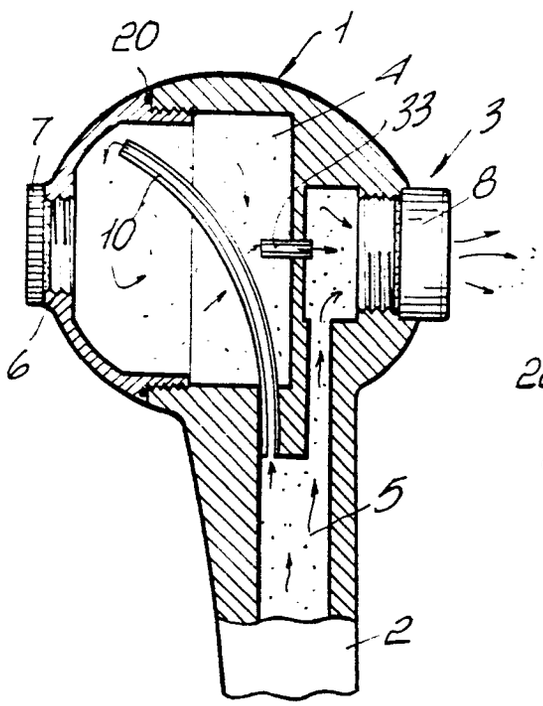

Fig. 8

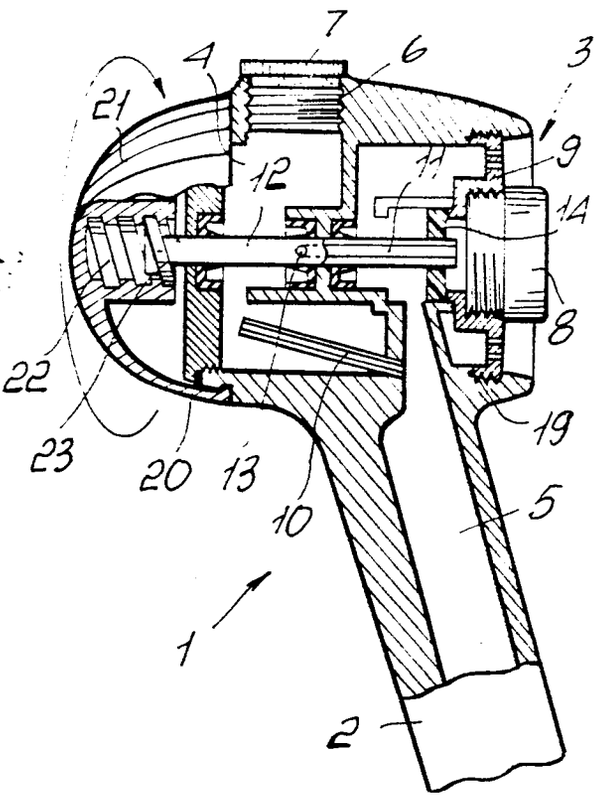

Fig. 5

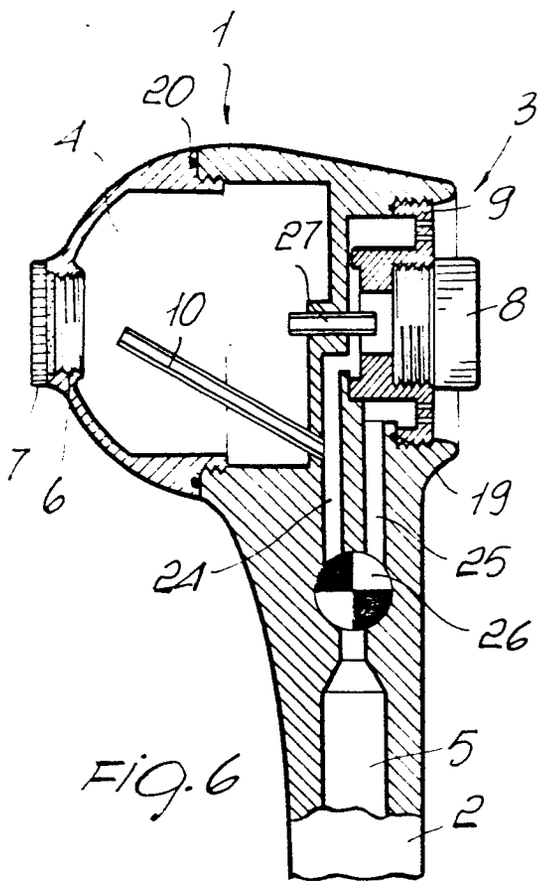

Fig. 6

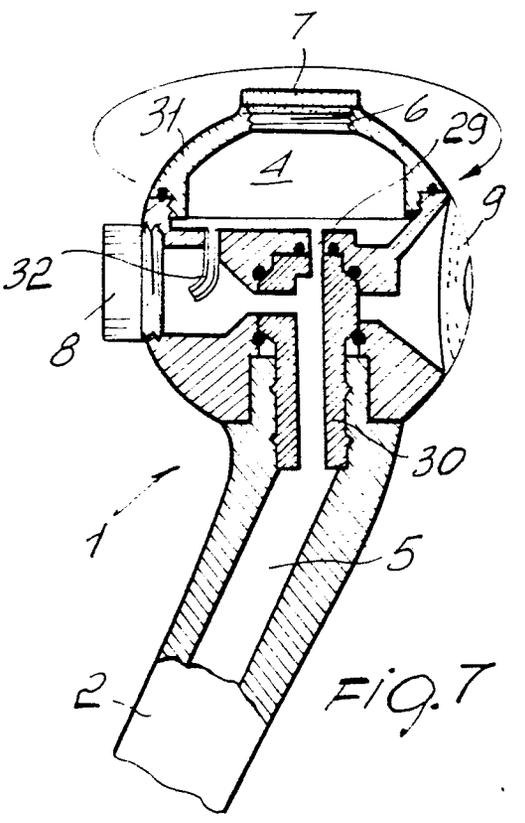

Fig. 7