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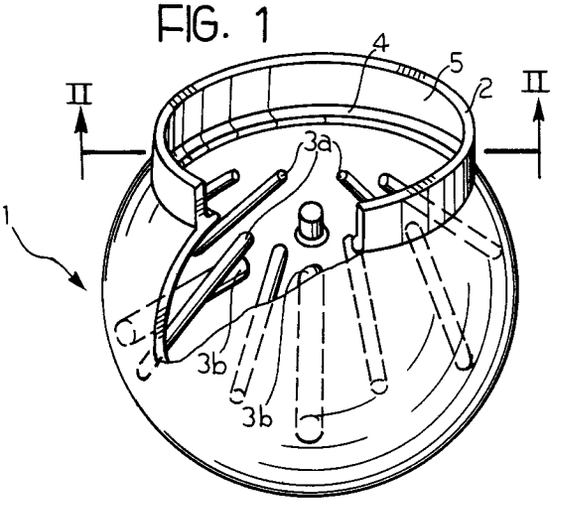
(54) Improvements to detergent dispensers/measuring devices.

(57) The dispenser/measuring device, particularly for dispensing a detergent in a washing machine, is of the type comprising a hollow body (1) with a mouth (2) for dispensing the detergent and has a plurality of elongate elements (3a, 3b, 8a, 8b, 6) which extend within the body from its wall and can prevent or limit the dispensing of the detergent in a mass.

FIG. 1



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The present invention relates to dispensers/measuring devices, particularly for dispensing a detergent, of the type comprising a hollow body having a mouth for dispensing the detergent into the washing liquid whilst the drum of a washing machine is rotating.

Dispensers of this type are used widely for dispensing detergent liquids or powders, particularly but not exclusively in washing machines which do not incorporate automatic measuring devices.

These dispensers are also particularly useful for dispensing the very concentrated detergent compositions to which the detergents industry is turning increasingly, since they allow for a slow and controlled supply in the course of the washing cycle.

Particularly when the detergent is a powder with a high concentration of active cleansing agent, it has been found that, when placed in contact with the washing liquid, the powder tends to form a paste which, as a result of the knocks to which the dispenser is subject in the course of the washing cycle, may come out of the mouth of the dispenser in a mass. This event is to be considered highly undesirable since the fabrics may be damaged by contact with the mass of concentrated detergent powder.

The primary object of the present invention is to provide a dispenser/measuring device which enables the detergent to be diluted within the hollow body and a diluted detergent solution to be dispensed continuously and progressively.

For this purpose, the subject of the invention is a measuring device/dispenser of the type mentioned above, characterized in that the hollow body has a plurality of elongate elements which extend within the body from its wall and can prevent or limit the dispensing of a mass of detergent.

Further advantages and characteristics of the various embodiments of the device according to the invention will be described with reference to the appended drawings, provided purely by way of non-limiting example, in which:

Figure 1 is a perspective view of a preferred embodiment of the dispenser according to the invention,

Figure 2 is a section taken on the line II-II of Figure 1,

Figure 3 is a view of the dispenser of Figure 1 from above,

Figures 4 and 5 are perspective views of two alternative embodiments of the dispenser,

Figures 6, 7 and 8 are sections which illustrate steps of the injection-moulding method for producing one of the embodiments of the dispenser.

According to the preferred embodiment shown in Figure 1, a measuring device/dispenser comprises a hollow body 1 having a generally spherical configuration, with a dispensing mouth 2 at the top.

Although the spherical shape is generally preferred, it is intended that the body may be of other shapes, for example, a generally circular cylindrical shape.

The body of the dispenser is preferably made of soft and flexible plastics material, for example, PVC, polyurethane, polypropylene, propylene-ethylene copolymers (e.g. the HIFAX materials marketed by Himont) and various elastomers, but it may also be made of a rigid plastics material. The material used preferably has a Shore A hardness of less than 100. The use of a flexible material enables a pumping effect to be achieved as a result of the knocks to which the dispenser is subject in the course of the washing cycle and this facilitates the dispensing of the detergent and improves the exchange of washing liquid and detergent in the dispenser.

According to the invention, the measuring device/dispenser comprises a plurality of elongate rod-like elements 3a and 3b which extend obliquely inwardly from the side wall of the body. As shown in Figures 1 and 2, the elongate elements comprise a first, upper set of angularly spaced rods 3a forming a first conical envelope and a second, lower set 3b forming a second conical envelope.

The elements 3a and 3b are also made of flexible material and are preferably integral with the wall of the body.

The elongate elements perform a retaining function when the detergent is constituted by a powder, preventing a concentrated paste from coming out in a mass. Moreover, the elements perform an important function as stirrers within the measuring device/dispenser.

In fact, as a result of the knocks to which the dispenser is subject within the drum of the washing machine and which cause its side wall to be squashed, the elongate elements are moved in various directions and thus perform a mixing action very similar to that of a rod stirrer. These movements destroy any lumps formed by the detergent powder in contact with the washing liquid.

The dispenser preferably has a rib 4 and an axial collar 5 adjacent its mouth. The function of the rib 4 will be described in greater detail below with reference to the method of producing the device. The elongate elements 3a and 3b may extend into the vicinity of the rib 4 or may extend a few millimeters beyond the rib; in order that the dispenser can be produced as an integral body by injection-moulding, the points at which the elongate elements 3a and 3b are attached to the wall of the body 1 are located in the hemispherical portion opposite the mouth 2 and hence below (with reference to the drawings) the horizontal plane which

coincides with the maximum diameter of the generally spherical body 1.

In the embodiment shown in Figure 4, the body of the measuring device/dispenser comprises a plurality of coplanar, baffle-like, elongate elements 6 which extend radially from the wall of the collar 5, above the rib 4. The baffles 6 in this embodiment are also of flexible plastics material integral with the body and perform the main function of retaining the detergent powder mixture, preventing it from coming out in a mass. It is intended that the baffle-like elements 6 may also be used in the embodiment shown in Figures 1-3.

In the embodiment of Figure 5, the elongate elements are constituted by a plurality of angularly spaced baffles 8a and 8b arranged in rings and extending from the base of the dispenser.

A first set of baffles 8a, extending axially or obliquely, defines a first chamber with apertures 9 and a second set of baffles 8b defines a second, concentric chamber with apertures 10. The retention of the detergent powder may be improved with the use of baffles of the type indicated 6 in Figure 4 adjacent the mouth of the dispenser.

The measuring device/dispenser is preferably produced by injection moulding by the steps shown schematically in Figures 6, 7 and 8. These drawings show two dies 11 and 12 and a male element 13 which has cavities 14 complementary in shape to the elongate elements to be produced.

The male element 13 has an annular groove 15 corresponding to the rib 4 of the measuring device/dispenser described above.

There is also an axial duct 16 in the male element for the supply of compressed air.

The plastics material is injected into the die 12 through a duct 17. The two dies are then opened as shown in Figure 7 and compressed air is supplied through the duct 16 in the male element 13.

As a result of the supply of compressed air, the rib 4 performs a sealing function between the body 1 and the male element 13 until, as the pressure increases, the body of the dispenser is practically thrown off the male element 13. The method indicated above enables the production of an integral measuring device/dispenser body which has elements of the type indicated 3 extending within the body and which also has baffle-like elements of the type indicated 6 in Figure 4.

Claims

1. A measuring device/dispenser, particularly for dispensing a detergent in a washing machine, of the type comprising a hollow body (1) having a mouth (2) for dispensing the detergent, characterized in that the hollow body has a plurality of elongate elements (3a, 3b, 8a, 8b, 6) which extend within the body from its wall and can prevent or limit the dispensing of the detergent in a mass.

2. A dispenser/measuring device according to Claim 1, characterized in that the elongate elements are constituted by angularly spaced rods (3a, 3b) extending from the side wall of the body towards its central axis.

3. A measuring device/dispenser according to Claim 1 or Claim 2, characterized in that the elongate elements comprise a plurality of angularly spaced baffles (6) disposed in a ring and extending radially in the mouth of the container.

4. A measuring device/dispenser according to Claim 1, characterized in that the elongate elements comprise a plurality of angularly spaced baffles (8a, 8b) extending axially or obliquely from the base wall of the body.

5. A measuring device/dispenser according to any one of Claims 1 to 4 in which the elongate elements are made of flexible plastics material and are integral with the body.

6. A measuring device/dispenser according to any one of Claims 1 to 5, characterized in that it comprises a rib (4) adjacent the mouth of the body.

7. A measuring device/dispenser according to Claim 6, characterized in that it comprises a circular collar (5) above the rib (4).

8. A dispenser/measuring device according to any one of Claims 1 to 7, characterized in that the body is made of flexible plastics material.

9. A dispenser/measuring device according to Claim 8, characterized in that it is made of a flexible plastics material having a Shore A hardness of less than 100.

10. A measuring device/dispenser according to any one of Claims 1 to 9, characterized in that it can be produced in one piece by injection moulding.

FIG. 1

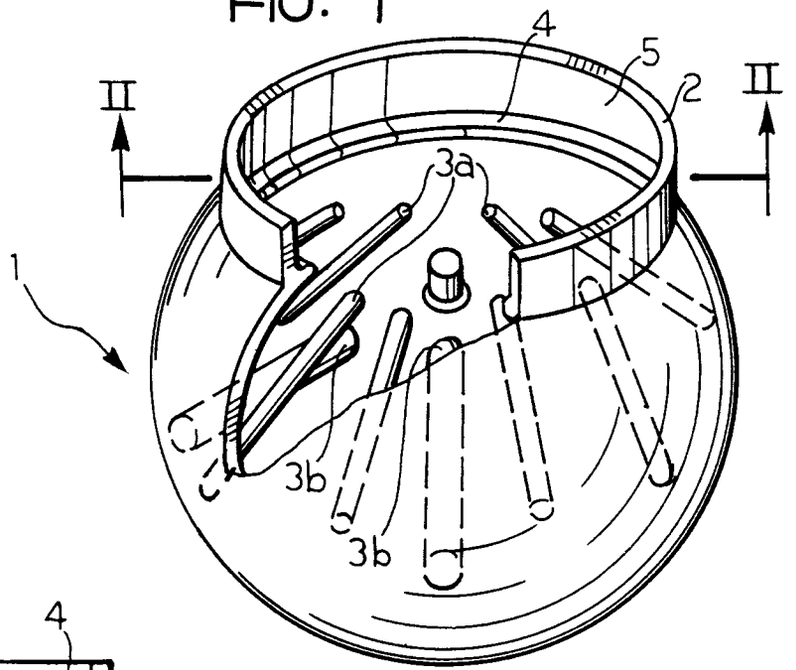


FIG. 2

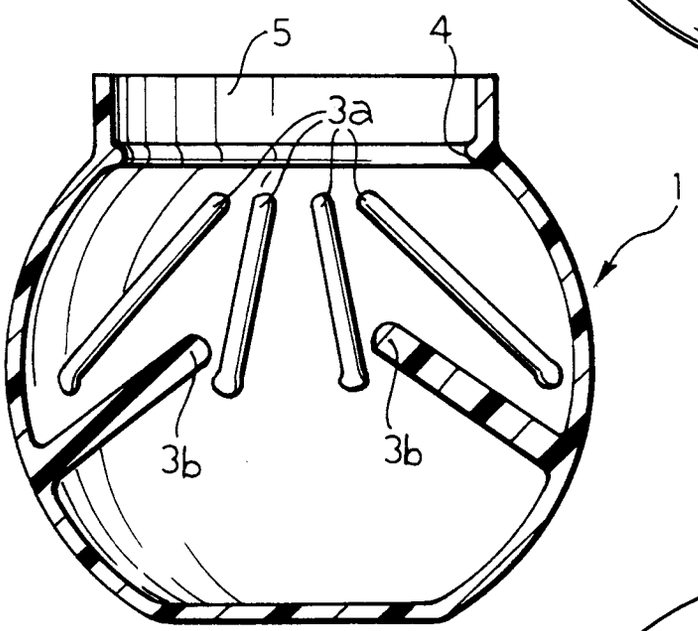


FIG. 3

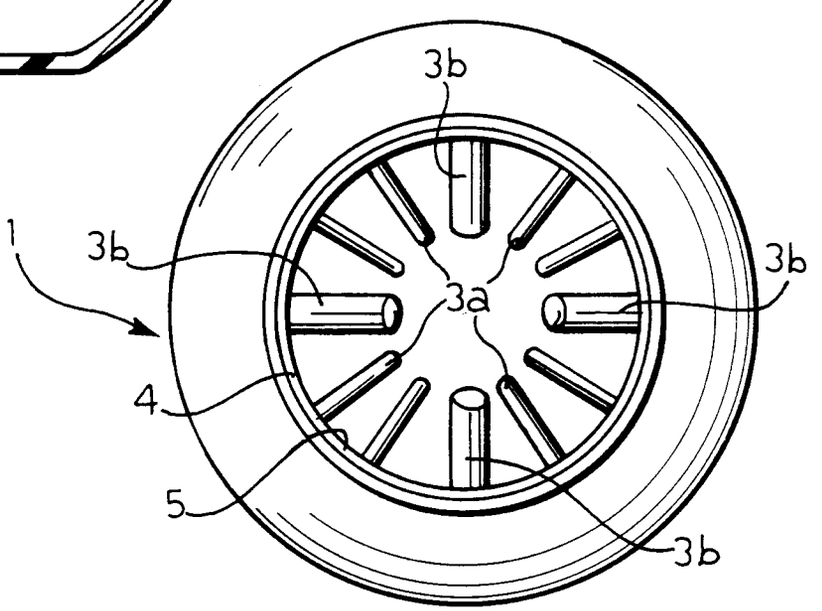


FIG. 4

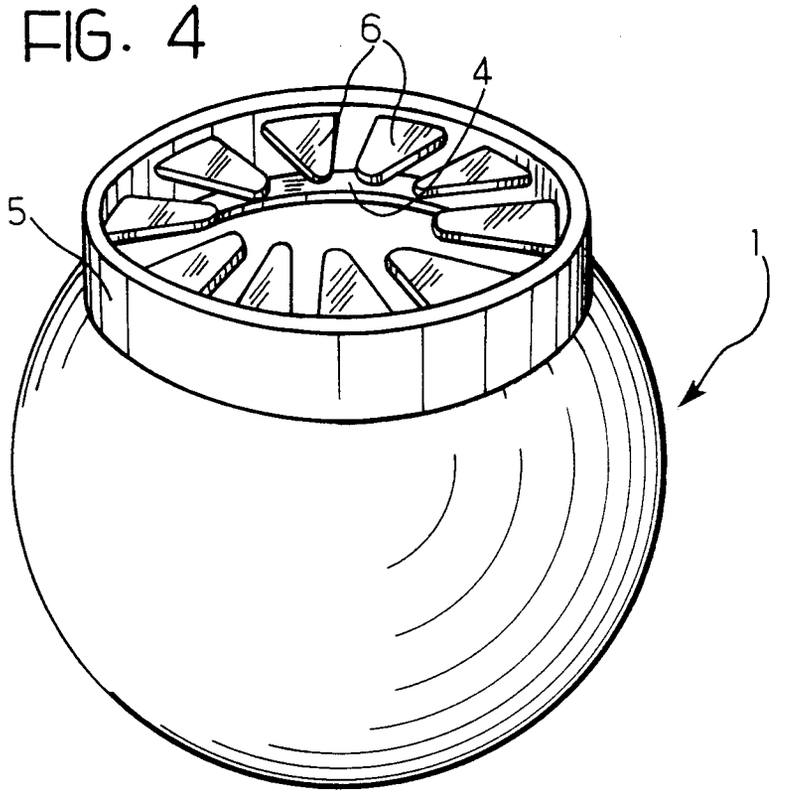


FIG. 5

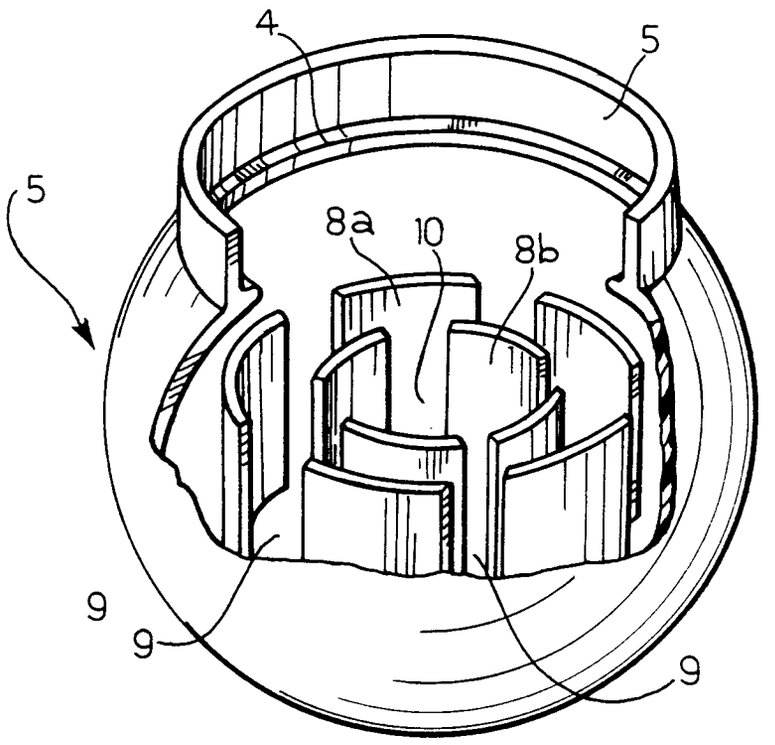


FIG. 6

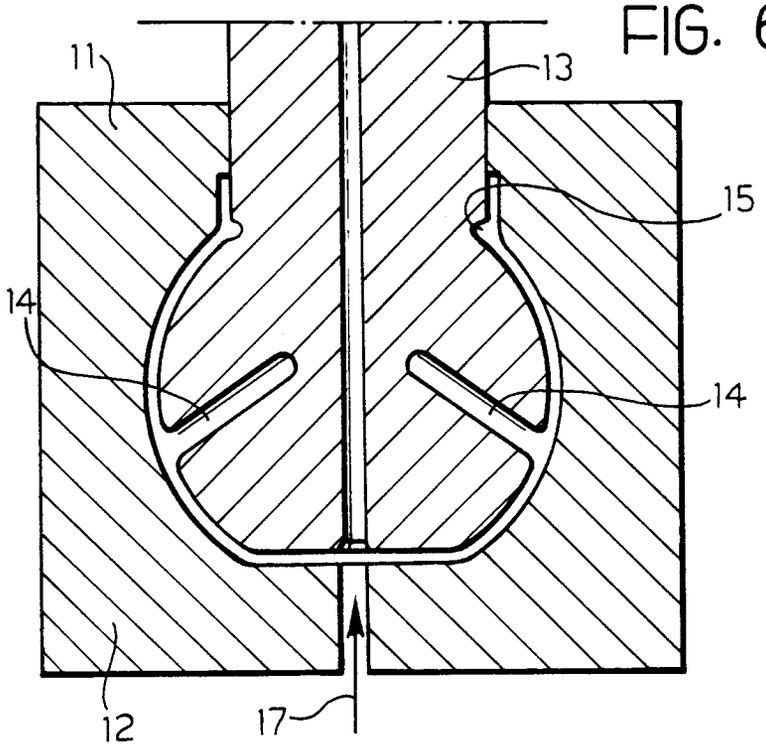


FIG. 7

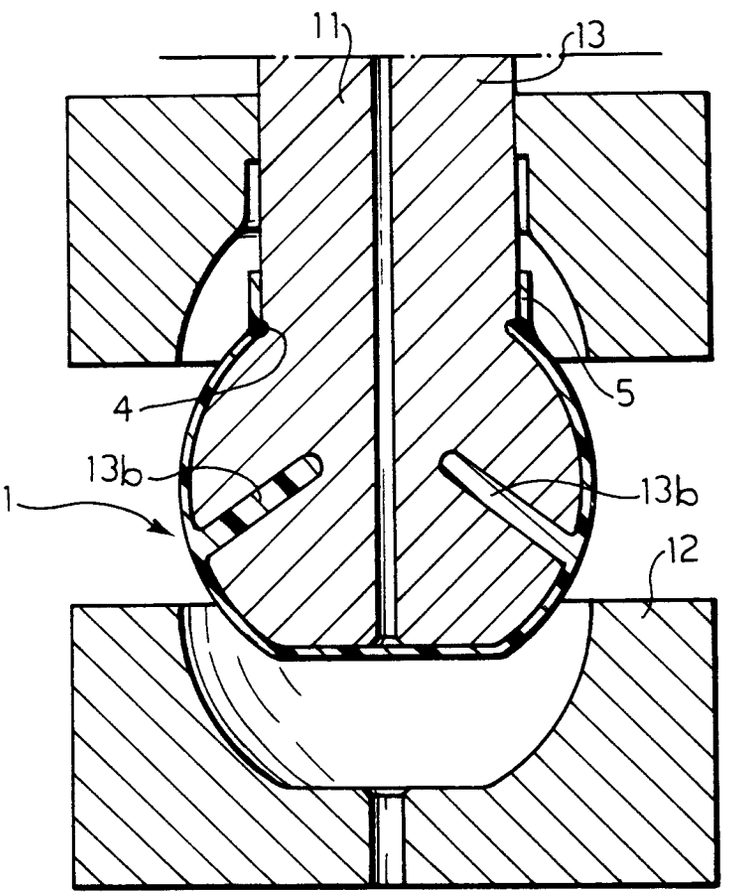
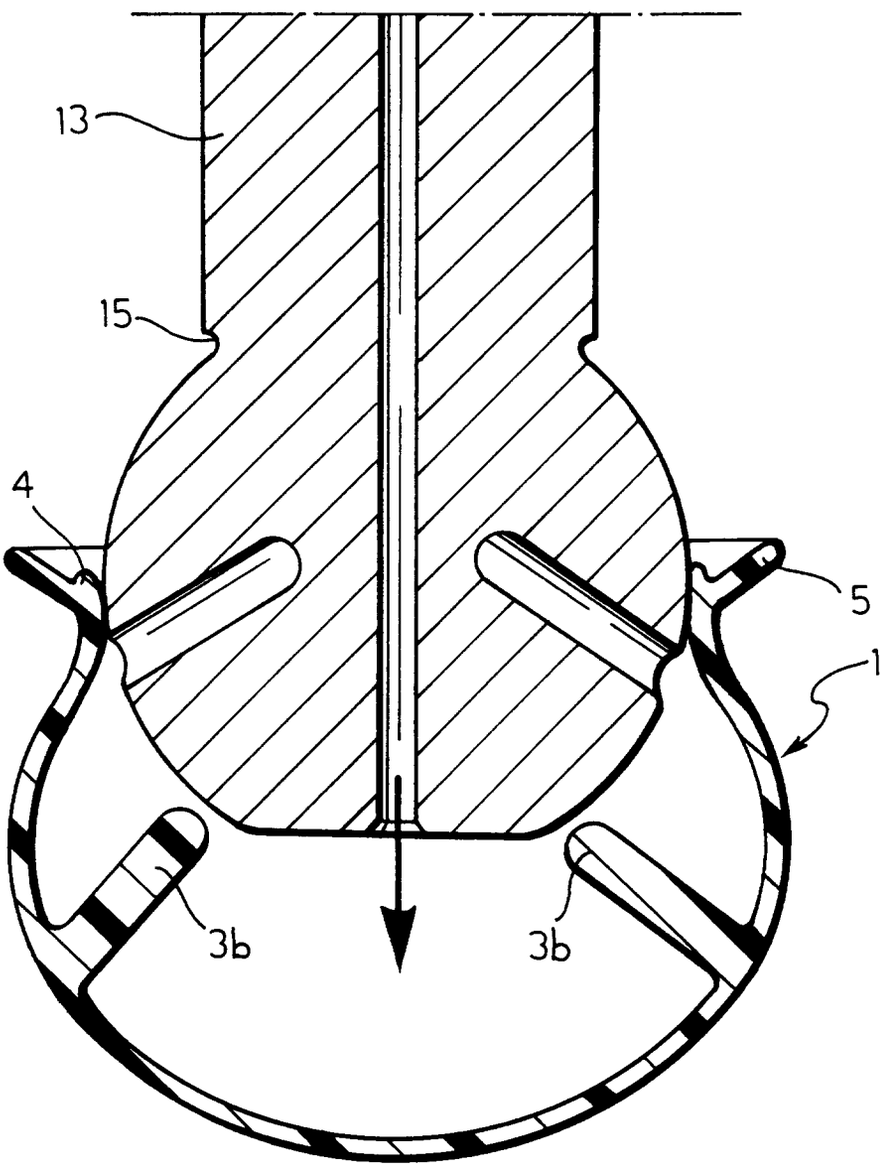


FIG. 8



European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 93 10 5121

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
A	EP-A-0 328 765 (HENKEL KOMMANDITGESELLSCHAFT AUF AKTIEN) * claims 1,4; figures 1,2 * ---	1,3,5, 8-10	D06F39/02
A	JP-U-5 075 567 (TOKYO SHIBAURA DENKI K.K.) * figures * ---	1,2,5,8, 9	
A	EP-A-0 368 680 (UNILEVER PLC) * claim 1; figure 1 * -----	1,8-10	

TECHNICAL FIELDS SEARCHED (Int.Cl.5)

D06F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	10 February 1994	Courrier, G

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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