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Dispensing and diffusing device which can be incorporated in a receptacle, especially for liquid products.

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84

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References cited:
**EP-A- 0 109 704
EP-A- 0 151 549
EP-A- 0 152 359
EP-A- 0 201 376
US-A- 3 095 722**

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Description

The present invention relates to the packaging sector, especially where liquid products used in metered quantities are concerned. In one of its preferred aspects, the invention also relates to the washing of laundry by machine.

It will be recalled, in the first place, that the applicant is already the proprietor of a certain number of patent applications which can be cited as references to illustrate the state of the art.

EP-A-0 151 549, published August 14, 1985 for a "Process for washing laundry by machine with a liquid detergent and device for carrying it out" relates, in particular, to a usually rechargeable device which is first filled with liquid detergent and is then placed in the drum of the machine together with the laundry to be washed. The detergent contained in the device diffuses progressively into the washing medium and into the laundry located in the machine. In one embodiment, the device has a filling orifice and vents for the progressive release of the liquid into the centre of the laundry being washed.

EP-A-01 52 359, published 21.8.85 for a "Device for machine-washing with a liquid detergent and process utilising the said device" relates to a device of the type mentioned above, which is characterised more particularly in that it has an essentially spherical form. In one embodiment, the device comprises a body and an attached assembly provided with a central filling orifice which can take the form of a shaft extending within the body. The filling or dispensing and/or diffusion of the liquid are possible via a certain number of orifices.

EP-A-0 201 376 published 12.11.86 (Art. 54 (3)) for a "Packaging receptacle with a built-in dispenser, especially for liquid products" relates to a receptacle incorporating a removable dispenser interacting with the shut-off device, with which the receptacle is equipped in the conventional way. Advantageously, this dispensing device also acts as a diffuser according to the teaching of the two patent applications mentioned above. Some embodiments are described to illustrate the removable fastening of the dispensing and diffusing device to the receptacle containing the liquid product. Thus, if the receptacle has the general shape of a bottle provided with a neck, the upper part of which carries a stopper, the dispensing and diffusing device can be made to interact with the neck and/or the stopper by various means.

In the course of work carried out in the sector of dispensing and diffusing devices and the receptacles associated with them, the applicant found that, during handling and storage operations, the devices equipping the receptacles could be damaged, particularly because of the crushing effect which the stacks of stored receptacles can undergo.

The object of the present invention is to overcome this disadvantage by means of a simple arrangement of the dispensing and diffusing device, without increasing the number of its components and at the same time preserving their functions intact. The subject of the invention is, therefore, a dispensing and diffusing device which can be incorporated in a

receptacle, especially for liquid products, the said device having the form of a hollow body with an aperture equipped with means of dispensing and diffusing the product, having a shaft provided with orifices and extending inside the body, this device also possessing means of fastening it removably to the receptacle or to the stopper of the latter, whereby the said shaft extends substantially up to the wall of the body opposite the said aperture, so that, particularly when the device is fitted on the receptacle, the shaft is capable of functioning at the same time as a support to keep the body intact.

The invention is used in a particularly advantageous way on the receptacles described in the abovementioned EP-A-0 201 376, in the applicant's name, and in a preferred form the dispensing and diffusing device is of the type described in the abovementioned EP-A-01 52 359, also in the applicant's name. To avoid burdening the present description, the teaching of the two applications in question is not reproduced in full in this specification, but of course is incorporated as a reference. Thus, the present invention can be used in all the embodiments described in detail in EP-A-02 01 376, that is to say those where the dispensing and diffusing device interacts removably with the neck of the receptacle, that is to say the upper part of the latter, or with the stopper with which it is equipped.

The actual dispensing and diffusing device preferably has the general spherical shape described in EP-A-01 52 359. According to this, again, the device consists of a hollow body and an attached assembly having orifices and/or vents for dispensing and diffusion. This assembly is fitted round the aperture of the body, and advantageously the means of fastening the device to the receptacle are likewise provided round the said aperture. Preferably again, the interaction between the receptacle and the dispensing and diffusing device is obtained by quick-action fastening means, for example clipping or the like. Such characteristics are already described in the European Patent as mentioned above.

The improvement provided as a result of the present invention consists in that the shaft serving for dispensing and diffusing the liquid also functions as a support, pre-venting the device from being crushed in any way. For this purpose, the shaft, which in prior embodiments extended inside the body in a limited way just sufficient to ensure correct pouring of the liquid during filling, according to the invention extends substantially up to the wall of the body which is opposite its aperture.

According to the present invention, the expression "extends substantially up to the wall of the body" means that the shaft reaches the immediate vicinity of this wall which is usually made in the form of a flattened portion. It also comes within the scope of the invention for the shaft to touch the wall, but for practical reasons arising from the production of such articles by means of injection-moulding it is preferable that the end face of the shaft should stop at a very short distance from the wall, leaving a gap relative to the latter of, for example, 1 to 5 mm. It was found that the shaft arranged in this way served perfectly for supporting the device and ab-

sorbed any crushing likely to occur during storage or handling.

The shaft arranged according to the invention also has, on its side walls, ports making it possible to ensure that the liquid is distributed effectively during filling and diffusion.

The profile of the shaft is not critical. It is sufficient that it should have the form of a surface of revolution. For production reasons, it is preferable for the shaft to have a slightly conical or stepped shape. There is nothing to prevent the use of a shaft designed in the form of an essentially cylindrical tube, but this embodiment is less advantageous and presents problems of removal during moulding.

In a simple embodiment, the shaft is open along its entire inner surface, without having any internal partitioning between the aperture of the device and the end face of the shaft. In contrast, it is possible to provide one or more intermediate partitions: thus, in a particular embodiment, a partition perforated with orifices is fitted inside the shaft in the vicinity of its aperture.

The invention will now be illustrated, without being limited in any way, by means of the following description, with reference to the attached drawings in which:

Figure 1 is a diagrammatic view in axial section of an embodiment of the device according to the invention, associated with a receptacle.

Figure 2 is a view similar to that of Figure 1, showing an alternative embodiment.

Figure 3 is a similar view showing another alternative form.

Figure 4 is a similar view illustrating yet another alternative form.

The devices shown as an illustration in the drawings derive from one and the same inventive concept, and consequently the components and elements appearing in the various figures will be designated by the same reference numerals. Each dispensing and diffusing device is denoted by the general reference numeral 1. It is associated with a receptacle 2 which, for the sake of convenience in the drawing, has been shown at the top of the figures, whereas the device is shown at the bottom. In practice, of course, the opposite would be the case, the more so because the receptacle 2 is intended for containing a liquid, particularly a detergent product.

The device 1 comprises essentially a hollow body 3 of general spherical shape, in which is mounted an assembly 4 serving for filling and then diffusing the liquid. For this purpose, the assembly 4 has vents 5 and orifices 6. In the zone 7 there are means of clipping it on the stopper 8 closing off the receptacle 2. Moreover, the body 3 and the assembly 4 conform to the teaching of EP-A-01 52 359. In particular, notches 9 making it possible to grasp the device 1 easily can be seen. All the characteristics described hitherto belong to the known state of the art and have been described, in particular, in the European Patent Application just mentioned. Likewise, the method of fitting the device 1 to the stopper 8,

that is to say its quick-action removable fastening by means of clipping, is described in EP-A-02 01 376. It goes without saying that any other fastening method could be adopted.

According to the invention, the assembly 4 is extended inside the body 3 in the form of a shaft 10 having ports 11. The essential characteristic of the invention is that the end face 12 of the shaft which is opposite its aperture extends to a very short distance (for example, between 1 and 5 mm) from the flattened portion 13 of the body 3.

In the example illustrated in Figure 1, the shaft 10 is of slightly frustoconical shape, widening towards the end face 12. Moreover, there is no intermediate partition over the entire inner surface of the shaft 10. In other words, when the device 1 is separated from the receptacle 2, the aperture 14 located opposite the end face 12 is free, thus allowing the filling liquid to flow off normally.

The device described in Figure 1 can be used in the same way as any one of the devices described in the European Patents mentioned above. If, in a preferred use, the receptacle 2 contains a liquid detergent product, the device 1 caps the upper part of the receptacle for the purposes of storage, handling and sale. During use, the housewife removes the device 1 from the top of the receptacle. After removing the stopper 8 from the latter, she can pour the liquid detergent into the body 3 up to the desired level. She then installs the device in the washing-machine at the centre of the laundry in order to wash it.

In the improvement made as a result of the invention, the shaft 10, which participates in the filling and diffusing functions during washing, also performs another function, namely that of a support capable of preserving the body 3 intact when the device 1 is subjected to a crushing force, for example during storage. To allow easy filling, the shaft 10 has ports 11, and there can be, for example, four of these. It was found that the presence of these ports did not impair the function of mechanical support also performed by the shaft 10.

In the event of inopportune crushing, the flattened portion 13 comes up against the end face 12, but the body 3 is not subjected to any further stress.

An article of the type illustrated in Figure 1 is easy to produce at low cost from plastic by means of the injection moulding technique.

The alternative form shown in Figure 2 is similar in all respects to the device of Figure 1, except that the shaft 10 incorporates an intermediate partition 15 which can have orifices (not shown in the drawing). In this case, during filling, the liquid flows off essentially via the lateral orifices 6 and via the holes in the partition 15. It was found that, in some cases, a device arranged according to Figure 2 made it possible to achieve a high uniformity of diffusion, the liquid contained in the body 3 flowing off progressively into the laundry during washing, passing essentially through the orifices 6 and the vents 5. Nevertheless, the ports 11 are still useful for ensuring good distribution of the liquid within the body 3.

Figure 3 shows a device similar in all respects to that of Figure 2. Here, however, the conicity of the shaft 10 is reversed, that is to say it narrows towards its end face 12. Its general form remains frustoconical.

Figure 4 Shows an alternative form, in which the shaft is designed in the same way as in Figures 2 and 3, again incorporating an intermediate partition 15, but its profile has steps. In the example illustrated, there are three of these, designated by reference numerals 16, 17 and 18. Of course, the ports of the shaft have an identical profile. In the example of Figure 4, the diameter of the end face 12 is greater than the aperture delimited by the step 16 at the level of the intermediate partition 15. In another possible alternative form, the arrangement could be reversed, and in particular the step 16 would have a diameter greater than that of the step 18 in a somewhat similar way to the shaft of Figure 3 which had a conicity opposite that of Figure 2.

As can be seen, many alternative forms are possible and are within the scope of a person skilled in the art. The examples illustrated in Figures 1 to 4 are purely illustrative.

It will also be noted, once again, that the preceding description was given on the basis of a particular embodiment of a dispensing and diffusing device and of the method of fitting it to a receptacle. The European patent applications mentioned at the start of this specification also give a certain number of other exemplary embodiments. It is not beyond the scope of the invention to use such devices equipped with a shaft participating in the filling and subsequent diffusion of the liquid, whilst at the same time performing a mechanical support function because it acts as a support within the hollow body. The said support function is especially useful when the dispensing and diffusing device is fitted on the packaging receptacle. There is nevertheless no doubt that this same function still exists when the device is used independently of the receptacle.

Claims

1. Dispensing and diffusing device which can be incorporated in a receptacle, especially for liquid products, the said device (1) having the form of a hollow body (3) with an aperture equipped with means (5, 6) of dispensing and diffusing the product, having a shaft (10) provided with orifices and extending inside the body (3), this device (1) also possessing means (7) of fastening it removably to the receptacle (2) or to the stopper (8) of the latter, whereby the said shaft (10) extends substantially up to the wall (13) of the body (3) opposite the said aperture, so that, particularly when the device is fitted on the receptacle, the shaft (10) is capable of functioning at the same time as a support to keep the body (3) intact.

2. Device according to Claim 1, characterised in that the end face (12) of the shaft (10) reaches the immediate vicinity of the wall (13), touching the latter or stopping at a very short distance from it, in particular leaving a gap of 1 to 5 mm.

3. Device according to one of Claims 1 and 2, characterised in that the shaft (10) has, in its lateral wall, ports (11) of which there are, for example, 4.

4. Device according to any one of Claims 1 to 3, characterised in that the shaft (10) has the form of a surface of revolution.

5. Device according to Claim 4, characterised in that the shaft (10) has a slightly conical shape.

6. Device according to Claim 4, characterised in that the shaft (10) has a profile with steps (16, 17, 18).

7. Device according to any one of Claims 1 to 6, characterised in that the shaft (10) is open along its entire inner surface, without having any internal partitioning.

8. Device according to any one of Claims 1 to 6, characterised in that the shaft (10) incorporates one or more intermediate partitions, in particular a partition (15) perforated with orifices and mounted inside the shaft in the vicinity of its aperture.

9. Use of the device according to any one of Claims 1 to 8, associated with a receptacle containing a liquid detergent.

10. Use according to Claim 9, characterised in that the device, after being filled with liquid detergent, is introduced into the drum of a washing-machine.

30 Patentansprüche

1. Abgabe- und Verteilvorrichtung, die an einem Behältnis vorgesehen werden kann, insbesondere für flüssige Produkte, wobei die Vorrichtung (1) die Form eines Hohlkörpers (3) mit einer Öffnung hat, die mit Mitteln (5, 6) zum Abgeben und Verteilen des Produktes ausgestattet ist, welche einen Schaft (10) aufweisen, der mit Öffnungen versehen ist und sich innerhalb des Körpers (3) erstreckt, wobei diese Vorrichtung (1) ferner Mittel (7) zum lösbaren Befestigen derselben am Behältnis (2) oder an einem Verschluss (8) desselben aufweist, wodurch der Schaft (10) sich im wesentlichen bis zu der der Öffnung gegenüberliegenden Wand (13) des Körpers (3) erstreckt, so daß, insbesondere wenn die Vorrichtung am Behältnis angebracht ist, der Schaft (10) befähigt ist, zugleich als Abstützung zu wirken, um den Körper (3) intakt zu halten.

2. Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß die Endseite (12) des Schafes (10) die unmittelbare Nähe der Wand (13) erreicht und diese berührt oder in einem sehr kleinen Abstand von der Wand endet, insbesondere unter Freilassung eines Spaltes von 1 bis 5 mm.

3. Vorrichtung nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß der Schaft (10) in seiner Seitenwand Durchtrittsöffnungen (11) aufweist, von denen beispielsweise 4 vorhanden sind.

4. Vorrichtung nach einem der Ansprüche 1 bis 3, dadurch gekennzeichnet, daß der Schaft (10) die Form einer Drehfläche hat.

5. Vorrichtung nach Anspruch 4, dadurch gekennzeichnet, daß der Schaft (10) eine leicht konische Form hat.

6. Vorrichtung nach Anspruch 4, dadurch ge-

kennzeichnet, daß der Schaft (10) ein Profil mit Stufen (16, 17, 18) hat.

7. Vorrichtung nach einem der Ansprüche 1 bis 6, dadurch gekennzeichnet, daß der Schaft (10) entlang seiner gesamten Innenfläche offen ist, ohne irgendwelche inneren Zwischenwände aufzuweisen.

8. Vorrichtung nach einem der Ansprüche 1 bis 6, dadurch gekennzeichnet, daß der Schaft (10) eine oder mehrere Zwischenwände aufweist, insbesondere eine mit Öffnungen versehene Zwischenwand (15), die innerhalb des Schaftes in der Nähe seiner Öffnung befestigt ist.

9. Verwendung der Vorrichtung nach einem der Ansprüche 1 bis 8 in Verbindung mit einem Behälter, das ein flüssiges Waschmittel enthält.

10. Verwendung nach Anspruch 9, dadurch gekennzeichnet, daß die Vorrichtung nach dem Füllen mit flüssigem Waschmittel in die Trommel einer Waschmaschine eingebracht wird.

montée à l'intérieur de la cheminée, au voisinage de son ouverture.

9. Utilisation du dispositif selon l'une quelconque des revendications 1 à 8, associé à un récipient contenant un détergent liquide.

10. Utilisation selon la revendication 9, caractérisée en ce que le dispositif, après remplissage avec le détergent liquide, est introduit dans le tambour d'une machine à laver le linge.

Revendications

1. Dispositif doseur et diffuseur pouvant être incorporé à un récipient, en particulier pour produits liquides, ledit dispositif (1) ayant la forme d'un corps creux (3) avec une ouverture équipée de moyens (5, 6) pour le dosage et la diffusion du produit, comprenant une cheminée (10) munie d'orifices et plongeant à l'intérieur du corps (3), ce dispositif (1) comportant également des moyens (7) pour sa fixation amovible sur le récipient (2) ou sur l'obturateur (8) de celui-ci, ladite cheminée (10) s'étendant sensiblement jusqu'à la paroi (13) du corps (3) opposée à ladite ouverture de sorte que, notamment lorsque le dispositif est monté sur le récipient, la cheminée (10) est capable de faire également fonction de tuteur pour assurer l'intégrité du corps (3).

2. Dispositif selon la revendication 1, caractérisé en ce que la face (12) extrême de la cheminée (10) arrive au voisinage immédiat de la paroi (13) en touchant celle-ci ou en s'arrêtant à une très faible distance, en laissant, notamment, un intervalle de 1 à 5 mm.

3. Dispositif selon l'une des revendications 1 ou 2, caractérisé en ce que la cheminée (10) comporte sur sa paroi latérale des fenêtres (11), par exemple au nombre de quatre.

4. Dispositif selon l'une quelconque des revendications 1 à 3, caractérisé en ce que la cheminée (10) a la forme d'une surface de révolution.

5. Dispositif selon la revendication 4, caractérisé en ce que la cheminée (10) a une forme légèrement conique.

6. Dispositif selon la revendication 4, caractérisé en ce que la cheminée (10) présente un profil à gradins (16, 17, 18).

7. Dispositif selon l'une quelconque des revendications 1 à 6, caractérisé en ce que la cheminée (10) est ouverte le long de toute sa surface intérieure sans présenter aucun cloisonnement interne.

8. Dispositif selon l'une quelconque des revendications 1 à 6, caractérisé en ce que la cheminée (10) comporte une ou plusieurs cloisons intermédiaires, en particulier une cloison (15) percée d'orifices,

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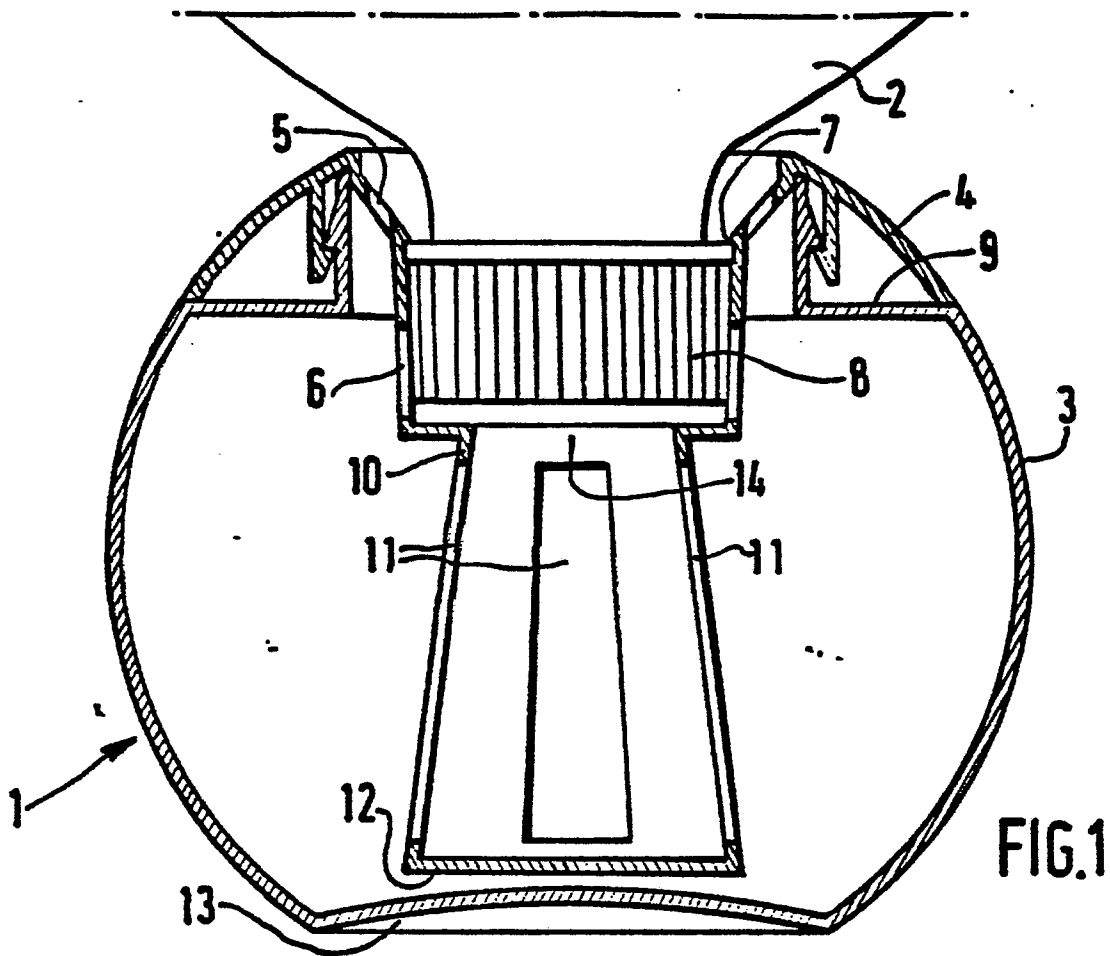


FIG.1

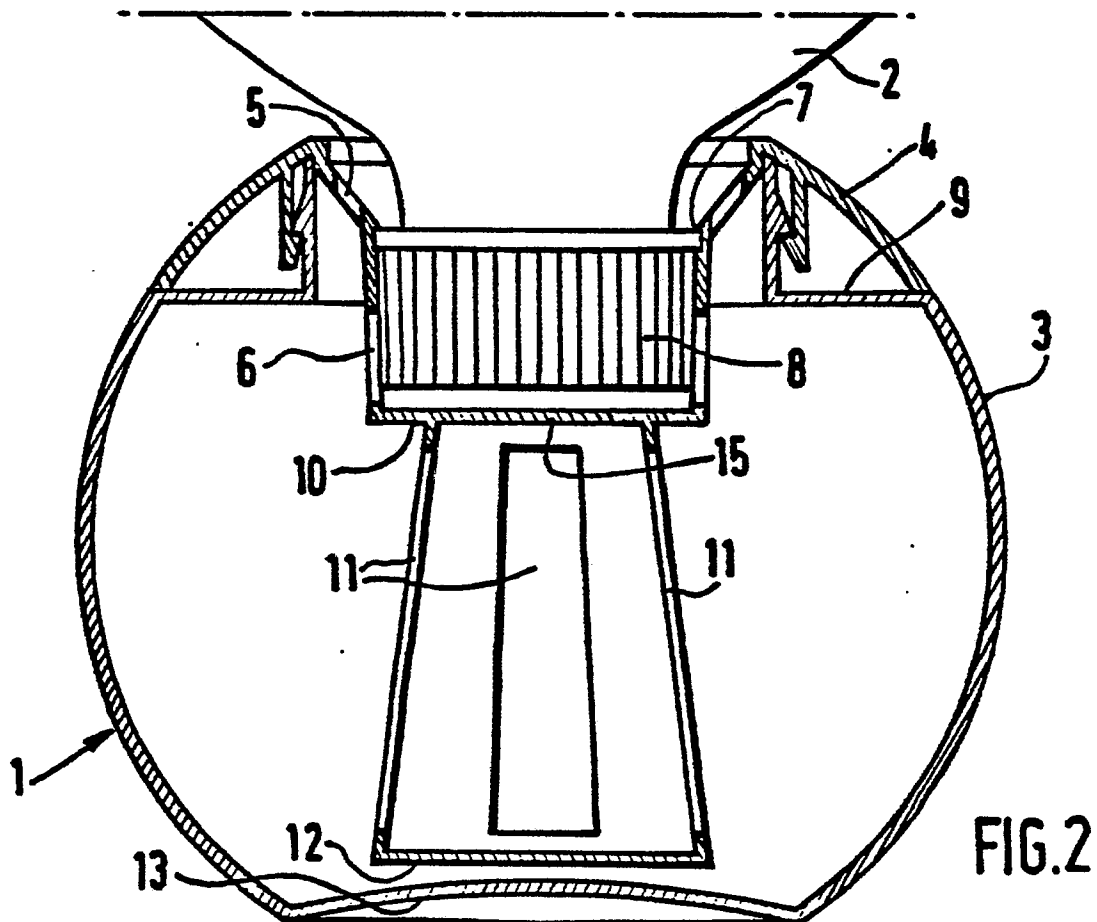


FIG.2

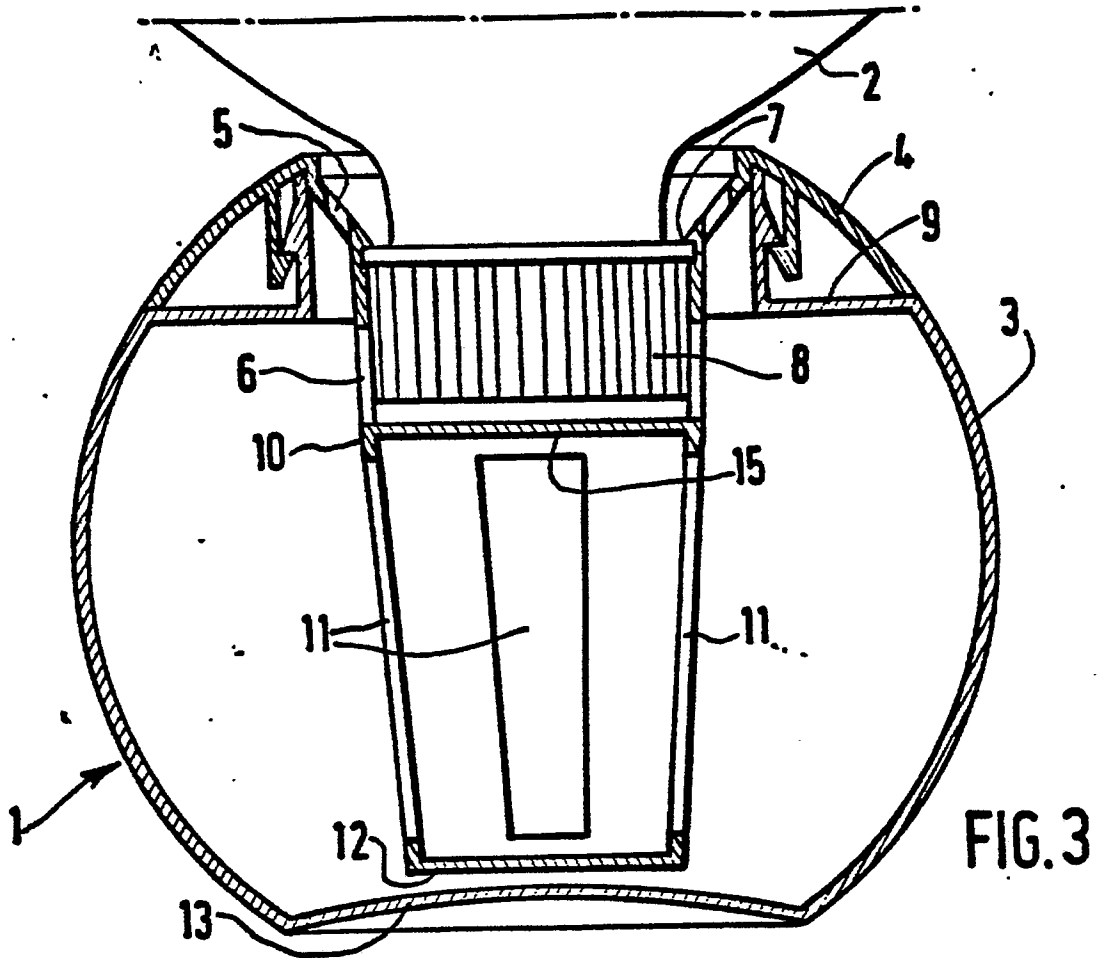


FIG. 3

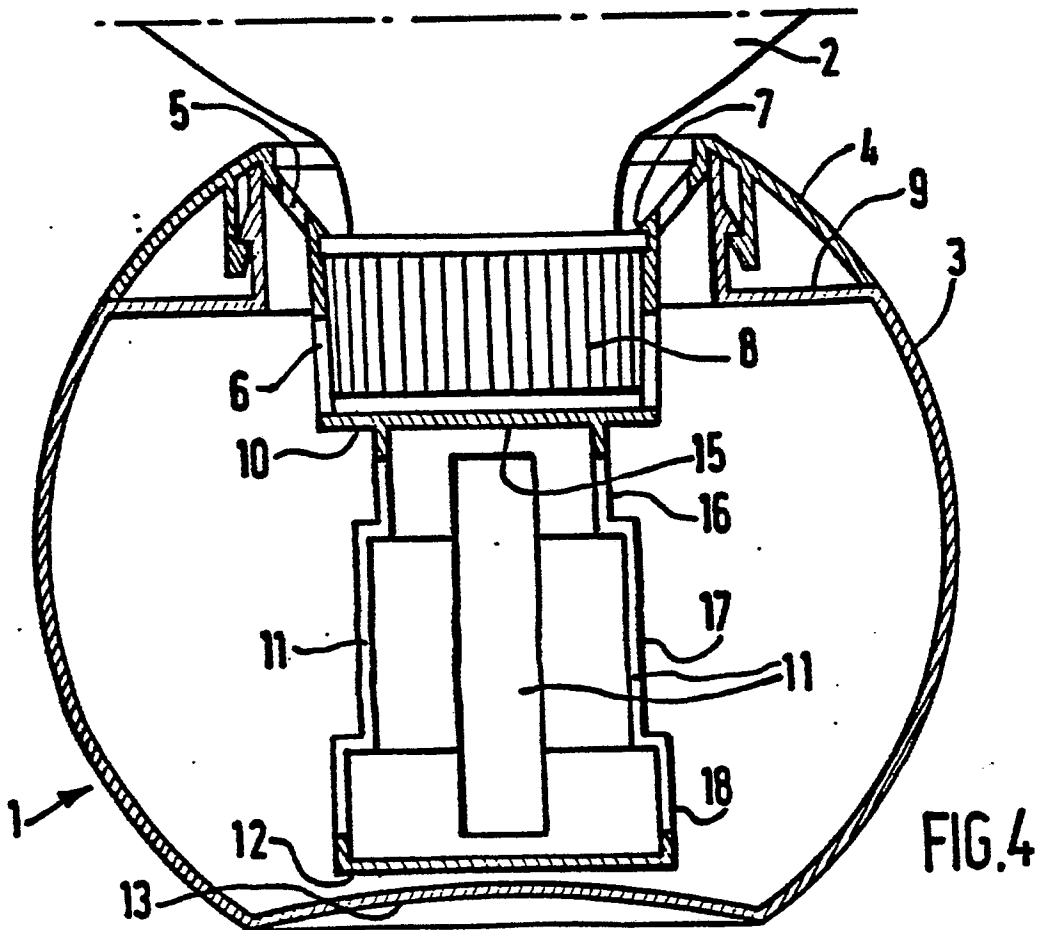


FIG. 4