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• **Marshall, Geoffrey**  
**Hull HU13 0TB East Yorkshire (GB)**  
• **Robinson, LEEANNE**  
**Hull, HU6 7TD (GB)**

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(74) Representative: **Atkinson, Peter Birch et al**  
**Marks & Clerk LLP**  
**Sussex House**  
**83-85 Mosley Street**  
**Manchester**  
**M2 3LG (GB)**

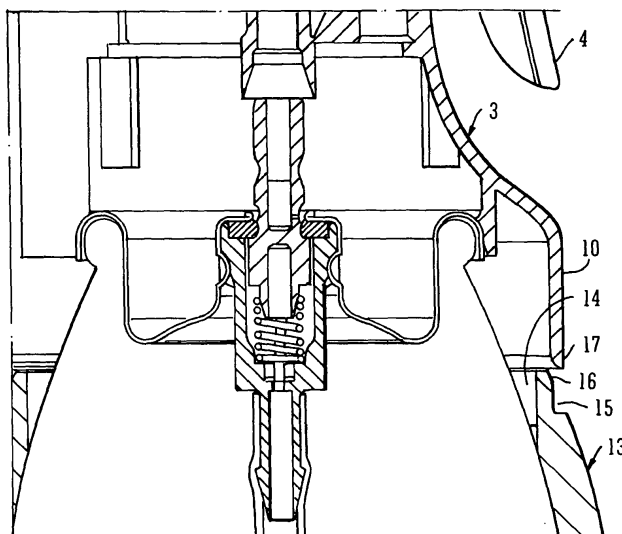
(71) Applicant: **Robert McBride Ltd**  
**Middleton,**  
**Manchester M24 4DP (GB)**

(72) Inventors:  
• **Holmes, Michelle**  
**North Cave HU15 2LA (GB)**

(54) **Sprayer device**

(57) The present application relates to a sprayer device (1) comprising:  
a container (2) holding a liquid medium to be discharged as a spray by the device (1), said container (2) having an outlet (8) at an upper end of the container and being formed with an upper shoulder region (6) that is of increasing external cross-section going in a direction downwardly away from said upper end of the body,

a nozzle (11) capable of communicating with the outlet (8),  
an actuator mechanism (4) operable to effect discharge of the liquid medium from said nozzle (11),  
a cap unit (3) mounted on an upper region of the container (2) so as to enclose the outlet, and  
a sleeve (13) pre-formed as a component separate of the cap unit and being seated on the shoulder region (6) of the container (2).



**FIG. 4**

## Description

**[0001]** The present invention relates to a sprayer device of the type comprising a container of a liquid, a nozzle and an actuator device for causing the liquid to be discharged through the nozzle. The invention relates more particularly, but not necessarily exclusively, to such devices in which the actuator mechanism is a trigger spray unit.

**[0002]** Sprayer devices of the type described are well known and include aerosol cans in which the container is pressurised with a propellant gas thus allowing the liquid to be discharged (e.g. as a jet or spray) through the nozzle when the actuator mechanism is operated to open an outlet valve on the container. Other examples are sprayer devices in which the container is unpressurised and its content is discharged by a "pumping-action" of the actuator mechanism.

**[0003]** Such spray devices are used for many different types of liquid. They are used extensively, for example, for household products such as cleaning agents and air fresheners. Alternatively the liquid may be a gardening product, such as a herbicide or insecticide. Many other examples of liquids could be mentioned.

**[0004]** For many such sprayer devices the actuator mechanism is a trigger spray unit mounted in a cap or the like which is itself located on the top of the container.

**[0005]** It is of course common practice to provide the container (by printing or other form of marking) with information which is specific to the liquid in the container. This may, for example, be instructions for use, hazard warnings, composition etc. It may also be desirable for the device to incorporate some "characterisation" of the liquid additional to the information provided on the container. Thus, for example, it might be desirable to incorporate a marking such as "danger" (possibly in Braille) prominently on the device but otherwise than on the container. Alternatively, the manufacturer or retailer of the product may wish to have a brand name displayed not only on the container but also elsewhere on the sprayer device. Further possibilities include colour coding information for the case where the liquid in the container is one of a range of products of different colour and (for the case where the liquid is a fragranced composition, e.g. an air freshener) for a portion of the device to be impregnated with the fragrance which may therefore be discerned without the need for operating the device.

**[0006]** In principle all such additional characterising information can be provided on the cap unit of the device. Thus, for example, written information (e.g. brand name or hazard warnings) may be moulded into the cap unit during its production. Similarly cap units of different colour and/or impregnated with the appropriate fragrance may be produced. Given that the cap unit may be of a relatively complicated construction (e.g. in the case where a trigger spray unit is also incorporated) the additional "characterisation" of the cap unit may be regarded as an unwanted additional step in the manufacture of that

unit.

**[0007]** It is therefore an object of the present invention to obviate or mitigate the above mentioned disadvantages.

5 **[0008]** According to the present invention there is provided a sprayer device comprising:

10 (i) a container holding a liquid medium to be discharged by the device, said container having an outlet at an upper end of the container and being formed with an upper shoulder region that is of increasing external cross-section going in a direction downwards away from said upper end of the body,

15 (ii) a nozzle capable of communicating with the outlet,

(iii) an actuator mechanism operable to effect discharge of the liquid medium from said nozzle,

20 (iv) a cap unit mounted on an upper region of the container so as to enclose the outlet, and

25 (v) a sleeve pre-formed as a component separate of the cap unit and being seated on the shoulder region of the container.

**[0009]** The term "sprayer device" as used herein is intended to encompass devices that spray the liquid contents of the container as a jet as well as devices that spray the liquid in the form of discrete droplets.

**[0010]** In the sprayer device of the invention, there is the cap unit and the separately produced sleeve which is pre-formed so as to seat on the shoulder region of the container. The sleeve may be used for "characterisation" purposes in relation to the liquid in the container. Thus it is not necessary to manufacture cap units specific for the liquid (so "standard" cap units can be used for a range of products) but rather a range of different sleeves may be produced each with the required characterisation. Production of a range of different sleeves (whilst also being an additional step in the manufacture of the sprayer device) is more straightforward than preparing "product specific" cap units.

35 **[0011]** Furthermore assembly of the sprayer device in accordance with the invention is straightforward. Starting from the container of liquid, the sleeve is positioned over the top of the container and moved downwards so as to seat on the shoulder region. Subsequently the cap unit is fitted.

**[0012]** The provision of the separate sleeve provides a number of advantages, for which the following are a few non-limiting examples.

40 **[0013]** The sleeve allows a single cap unit to be used for a range of products whilst retaining the facility to have tactile warnings of danger (e.g. in Braille) in a prominent position on the sprayer device (i.e. on the sleeve thereof). This is particularly useful for hazardous products such

as oven cleaners, insecticides and personal protection devices.

**[0014]** The sleeve allows a single actuator to be used on a range of containers which are of different size and/or material.

**[0015]** The sleeve can be fragranced with the aroma of the liquid within the container which may therefore smelled by a consumer without spraying the container contents.

**[0016]** The sleeve can be fragranced so as to provide the static component of a so called static/active system. More specifically, such a system comprising a sprayer device which contains a fragranced liquid ("active") to be discharged by the device and which is provided with a fragranced external element ("static"). The device may be provided in a room and emits fragrance "passively" by volatilisation from the "static" element. When a fragrance "boost" is required liquid may be discharged "actively" from the container.

**[0017]** The sleeve can be colour coded for different applications or different fragrance variants of a product.

**[0018]** The sleeve may be provided with information (e.g. branding) that reduces or eliminates the requirement to print or label the container or provide the latter with (as is often the case) a relatively flimsy tube which simply slides on to the body of the container and which is printed or otherwise provided with the required information.

**[0019]** Preferably the sleeve is of plastics material and can be produced, for example, by thermoforming, injection moulding, blow moulding or any other suitable technique. Plastics materials that may be used for producing the sleeve include polyethylene, polypropylene, polystyrene and rubbers. Generally the sleeve will be produced of a single material but there are other possibilities, e.g. a multiphase laminate. The sleeve may be of the same or different material from the cap unit and/or of a different colour. Thus, for example, the cap unit may be of a relatively rigid plastics material whereas the sleeve may be of softer plastics material.

**[0020]** Moulded sleeves may be produced with a textual or pictorial marking which is either raised above (i.e. embossed), or depressed below (i.e. debossed), the outer surface of the sleeve. If embossed then the marking may be in Braille.

**[0021]** It will be appreciated that appropriate pigments may be used during its manufacture to provide a sleeve of the desired colour.

**[0022]** Impregnation of the sleeve (e.g. with a fragrance) may be effected after its production in the moulding process. Alternatively the impregnant may be incorporated in the plastics material from which the sleeve is moulded.

**[0023]** In a preferred embodiment of the invention, the sleeve has an upper internal seating region by which it is seated on the shoulder region of the container. This seating region, which for preference is located at the upper end of the sleeve, may be provided by a flange for-

mation. The flange formation may extend continuously around the inner periphery of the sleeve (e.g. as an annular flange in the case where the sleeve is of circular internal cross-section) or may be discontinuous provided of course there are sufficient individual flange elements to seat the sleeve on the container.

**[0024]** The sleeve may have an internal surface complementary to the external surface of the shoulder region.

**[0025]** The external surface of the sleeve may be shaped to facilitate handling of the container. Thus, for example, the sleeve may be shaped to modify the outside shape of the can for handling reasons. Alternatively or additionally the sleeve may be formed to incorporate finger grip formations (or parts thereof). The surface finish of the sleeve may be smooth (apart from embossed or debossed information) but alternatively may be "roughened" to assist in gripping. Alternatively the sleeve may be of a relatively soft-material, again to facilitate handling.

**[0026]** In other embodiments of the invention the sleeve may simply be an aesthetic feature of the sprayer device.

**[0027]** Apart from its shoulder region, the body of the container may be cylindrical so as to be of constant circular cross-section with the shoulder region also being of cross-section (but of increasing cross-sectional size in a direction going from the top of the can to the top of the cylindrical body portion). The lower end of the sleeve may be provided at any level along the container. Thus, for example, the lower end of the sleeve may be at the upper end of the cylindrical portion of the body, part-way along the cylindrical body or at the base of the can.

**[0028]** For all embodiments of the invention, the upper edge of the sleeve may be below the lower edge of the cap unit or may abut or overlap with that edge.

**[0029]** The cap unit may be a push-fit on to the upper end of the sleeve. In this case, the cap unit may have a skirt which depends below the region at which the cap unit is fitted on to the container. The lower end of the skirt can be configured to be a push-fit on to the upper end of the sleeve. The lower end of the skirt may be received in a rebate provided around the upper end of the sleeve. The rebate may be internal, but is more preferably external of the sleeve.

**[0030]** The invention is particularly applicable to sprayer devices for which the actuator mechanism is a trigger spray unit, the trigger of which is pivotally mounted on the cap unit.

**[0031]** The invention may be applied to sprayer devices for which the container is internal pressurised with a propellant gas. The invention is however also applicable to sprayer devices for which the container is unpressurised and discharge of liquid spray is effected by a pumping action of the actuator mechanism (e.g. a trigger spray unit).

**[0032]** The liquid to be discharged by the sprayer device may, for example, be a household product such as a cleaning agent or an air freshener. However the invention is not limited to household products and the liquid

may for example be a gardening product, car care product, food product or any one of a vast range of liquid products that are suitable for discharge from a sprayer device. The liquid may, for example, be a pure liquid or may be an emulsion or suspension.

**[0033]** The invention will be further described by way of example only with reference to the accompanying drawings, in which:

Figs 1 a and 1 b are respectively sectional and side views of one embodiment of sprayer device in accordance with the invention;

Figs 2a and 2b are similar to Figs 1a and 1b but illustrate a second embodiment of sprayer device in accordance with the invention;

Figs 3a and 3b are similar to Figs 1a and 1b but illustrate a third embodiment of sprayer device in accordance with the invention; and

Figs 4-6 are sectional views showing location of the cap unit and sleeve on the sprayer device.

**[0034]** Figs 1a and 1b illustrate a trigger-operated sprayer device 1 in accordance with the invention comprising a pressurised container 2 of a liquid to be dispensed and a cap unit 3 incorporating a trigger 4, operation of which causes liquid from the container to be dispensed as a spray.

**[0035]** Container 2 is formed with a cylindrical body portion 5 and an upper shoulder region 6 which is of increasing external (circular) cross-section going in a direction downwardly from the top of the container 2 to the region where it (the shoulder region) meets the cylindrical body portion 5.

**[0036]** Provided at the top of container 2 is an annular rim 7 surrounding the container outlet 8 which is associated with an outlet valve 9.

**[0037]** Cap unit 3 is mounted of the annular rim 7 and has a skirt portion 10 that depends below this rim 7. Incorporated in cap unit 3 is a spray nozzle 11 connected in conventional manner by a tube 12 to the outlet valve 9. A linkage mechanism (not shown) associates trigger 4 with valve 9 whereby squeezing of the trigger causes valve 9 to open and allow liquid from the container to be discharged as a spray from nozzle 11.

**[0038]** In accordance with the invention, there is additionally provided on the container 2, and more particularly on the shoulder region 6 thereof, a plastics sleeve 13 seated on the shoulder region 6 of the container 2. As shown in Figs 1 a and 1b, the sleeve 14 is configured such that its upper edge abuts against the lower edge of the skirt 10 of cap unit 3 (although other options are possible see Figs 4 to 6 below) and with a lower edge that locates at the top of the cylindrical body 5 of the container 2 (i.e. at the lower end of shoulder region 6). Sleeve 13 is located in position by virtue of an internal annular rib

14 which is provided around the top edge of sleeve 13 and which has an internal diameter equal to the external diameter of the shoulder region 6 at a level of the latter which is immediately below the edge of the skirt of cap unit 3.

**[0039]** In order to assemble the sprayer device 1, container 2 is provided as a prefilled unit. Sleeve 13 is then located over the top of container 2 so that its internal rib 14 seats against the shoulder region 6. Finally cap unit 3 is located in position.

**[0040]** Since the sleeve 13 is separate of the cap unit 3 it is possible for the same type of cap unit 3 to be used for a wide range of different products but for these products to be identified by "characterisation" provided on the sleeve 13. Thus, for example, the sleeve may be provided with any one or combination of:

- (i) an embossed textual or pictorial marking;
- (ii) a debossed textual or pictorial marking;
- (iii) colour characteristic; and
- (iv) fragrance impregnant.

**[0041]** Reference is now made to Figs 2a and 2b which show a generally similar arrangement to that illustrated and described for Figs 1a and 1b save that the sleeve 13 extends to about half way down the cylindrical body 5 of the container 2.

**[0042]** In the embodiment of Figs 3a and 3b, the sleeve 13 extends over the entire length of the container 2.

**[0043]** Reference is now made to the more detailed illustrations of Figs 4-6 in which, for convenience, like parts to those described for Figs 1 and b are illustrated by the same reference numerals.

**[0044]** Figs 4-6 show progressive steps in location of cap unit 3 on to sleeve 13 for a particular embodiment of the invention. As shown in Fig 4, the upper end of sleeve 3 (at which the internal annular rib 14 is provided) is formed with an external annular rebate 15 into which the lower end of skirt 10 is locatable (see Fig 6).

**[0045]** The internal lower end of skirt 10 is configured so that it is a push-fit past the upper end of sleeve 13. For this purpose, sleeve 13 is provided at its upper end with a sloping surface 16 over which a lip 17 at the lower end of skirt 10 rides until skirt 10 is located in rebate 15.

## Claims

1. A sprayer device comprising:

- (i) a container holding a liquid medium to be discharged as a spray by the device, said container having an outlet at an upper end of the container and being formed with an upper shoulder region that is of increasing external cross-section going

- in a direction downwardly away from said upper end of the body,
- (ii) a nozzle capable of communicating with the outlet,
- (iii) an actuator mechanism operable to effect discharge of the liquid medium from said nozzle,
- (iv) a cap unit mounted on an upper region of the container so as to enclose the outlet, and
- (v) a sleeve pre-formed as a component separate of the cap unit and being seated on the shoulder region of the container.
2. A device as claimed in claim 1 wherein the sleeve is formed with an internal seating region which seats the sleeve on the shoulder region of the container, the internal seating region preferably being provided at the upper end of the sleeve.
3. A device as claimed in claim 2 wherein the internal seating region is provided by a flange formation, preferably an annular flange, internally of the sleeve.
4. A device as claimed in any one of claims 1 to 3 wherein the sleeve has an internal surface complementary to the external surface of the shoulder region.
5. A device as claimed in any one of claims 1 to 4 wherein apart from its shoulder region the body of the container is cylindrical so as to be of circular cross-section and wherein said shoulder region is also of circular cross-section.
6. A device as claimed in claim 5 wherein the sleeve has a lower end that locates at the upper end of the cylindrical portion of the body or the sleeve has a lower end that locates partway along the cylindrical portion of the body or the sleeve has a lower end of the sleeve is at the base of the can.
7. A device as claimed in any one of claims 1 to 6 wherein the cap unit is a push-fit on to the upper end of the sleeve.
8. A device as claimed in claim 7 wherein the cap unit has a skirt which depends below the region at which the cap unit is fitted on to the container and configured to be a push-fit on to the upper end of the sleeve.
9. A device as claimed in claim 8 wherein the lower end of the skirt is received in a rebate around the upper end of the sleeve.
10. A device as claimed in any one of claims 1 to 9 wherein the actuator mechanism is a trigger spray unit mounted on the cap unit.
11. A sprayer device as claimed in any one of claims 1 to 10 wherein the interior of the container is pressurised with a propellant gas.
12. A device as claimed in any one of claims 1 to 10 wherein the interior of the container is unpressurised.
13. A device as claimed in any one of claims 1 to 12 wherein the sleeve is provided with a textual or pictorial marking.
14. A device as claimed in any one of claims 1 to 13 wherein the marking is embossed or debossed.
15. A device as claimed in any one of claims 1 to 14 wherein the sleeve is impregnated with a fragrance.



FIG. 3b

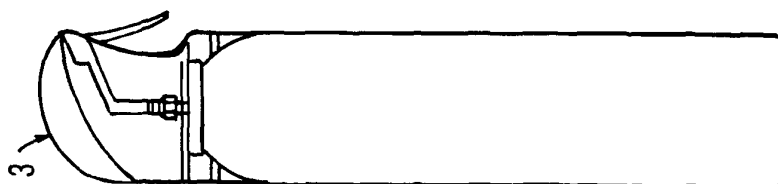


FIG. 3a

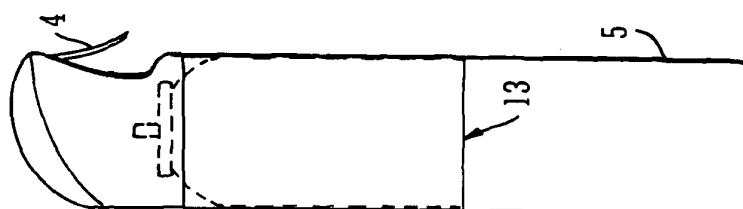


FIG. 2b



FIG. 2a

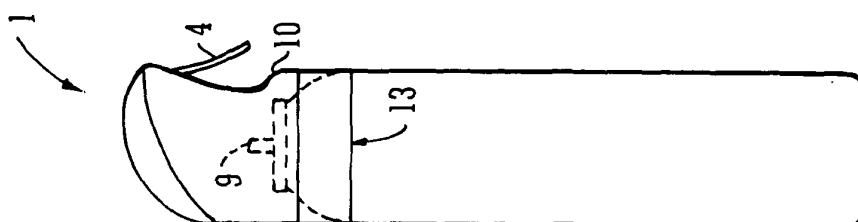


FIG. 1b

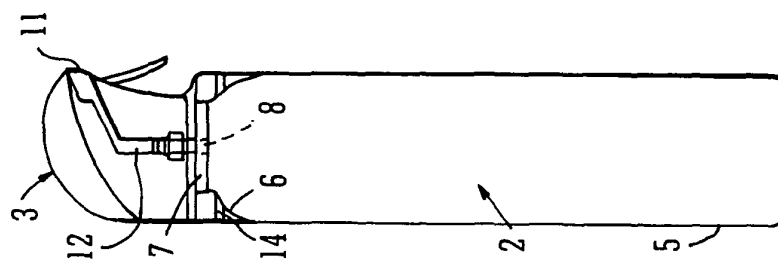


FIG. 1a

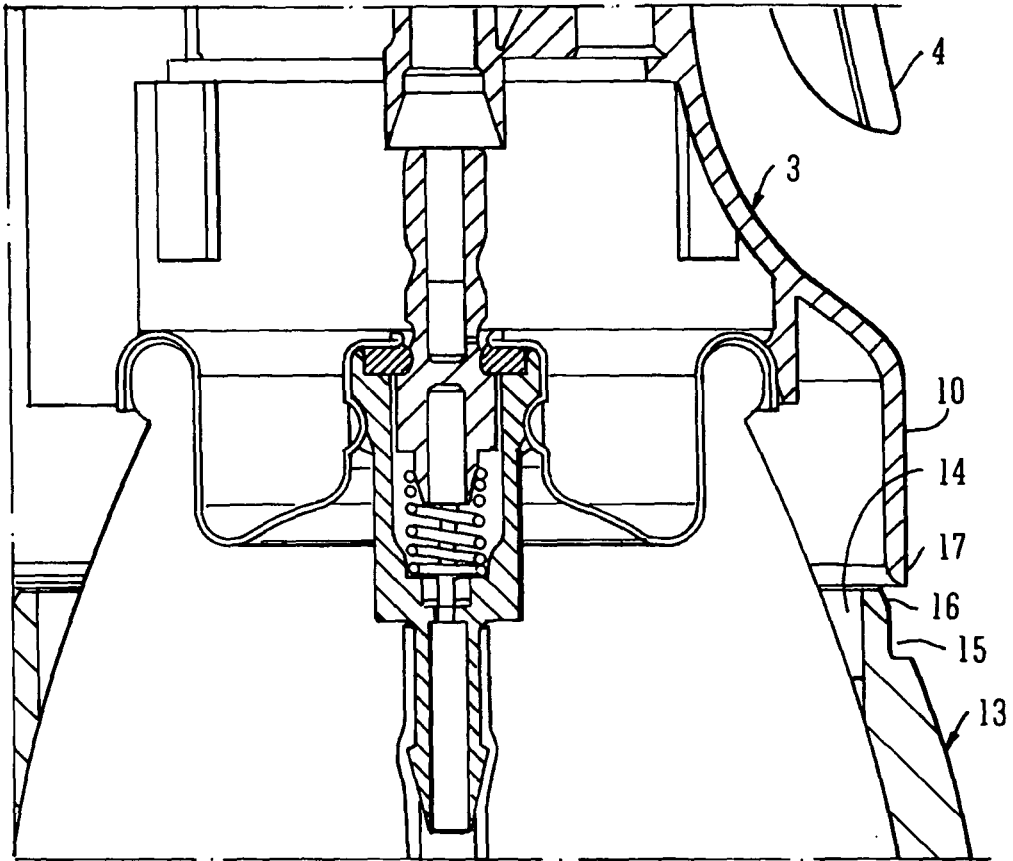


FIG. 4

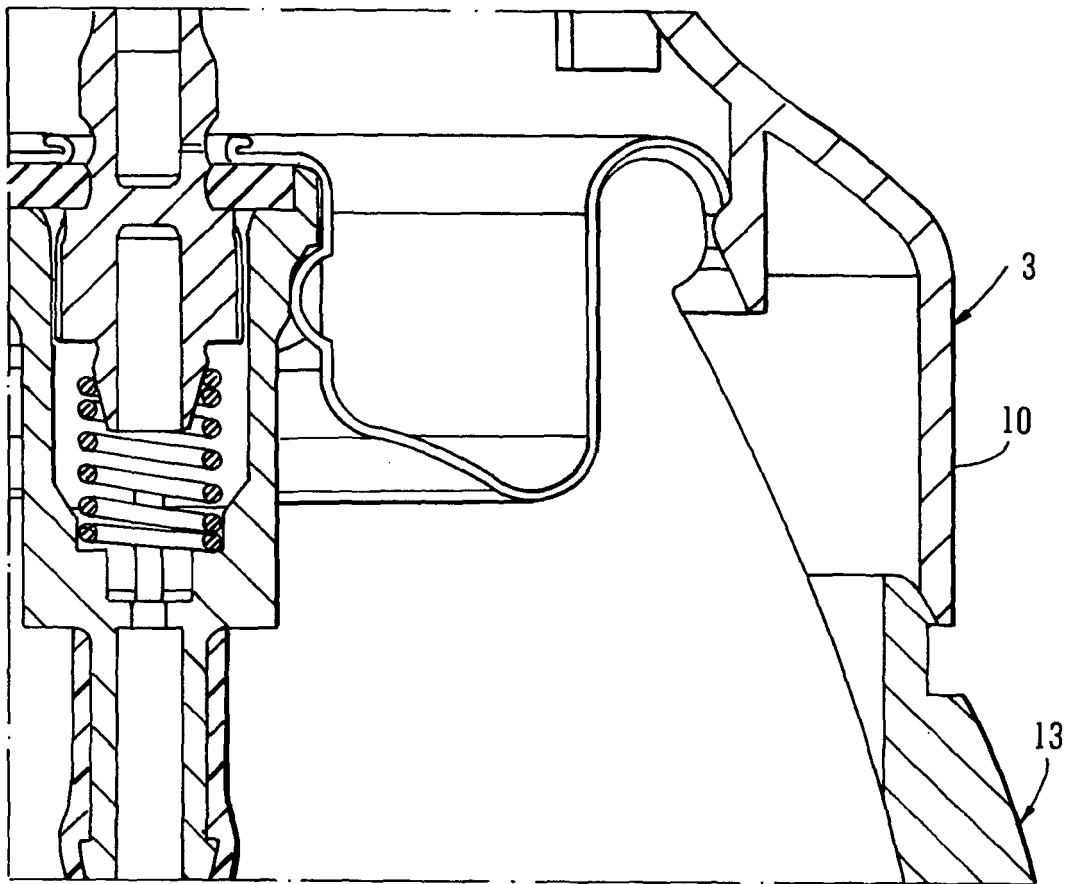


FIG. 5



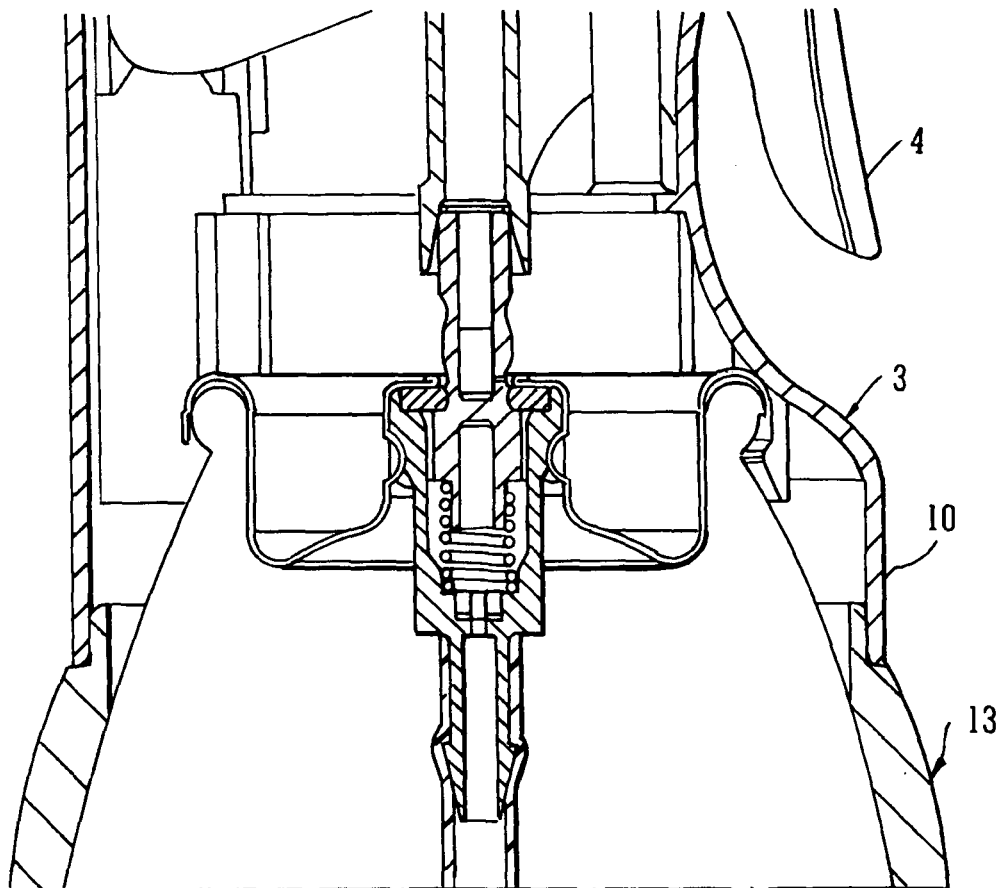


FIG. 6



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Application Number  
EP 09 25 1216

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 22 September 2009	Examiner Gineste, Bertrand
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons &amp; : member of the same patent family, corresponding document</p>			

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**ANNEX TO THE EUROPEAN SEARCH REPORT  
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
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