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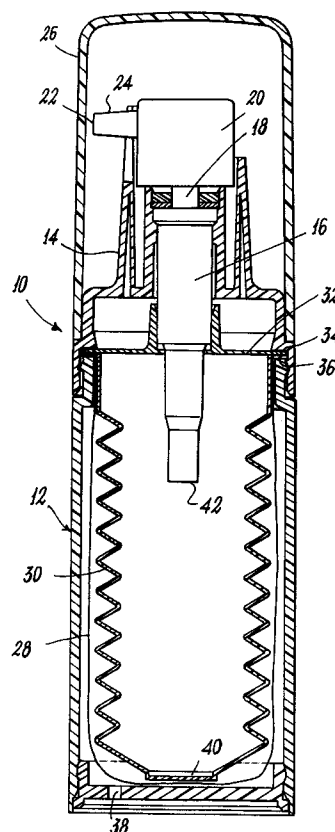
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I-20129 Milano(IT)(54) **Dispenser for dispensing predetermined quantities of fluid substance contained in a bellows-shaped bag.**

(57) The dispenser device (10) for dispensing a predetermined quantity of a fluid substance contained in a deformable bag (30) is provided with a manual suction and delivery pump (16) for drawing the substance to be dispensed from the bag (30). To ensure complete extraction from the bag (30) of the substance to be dispensed, the bag is bellows-shaped.

To prevent the substance contained in the normally polyethylene bag (30) from being reached by ultraviolet rays which could degrade it, and to prevent this substance being able to migrate through the polyethylene, the bag is enclosed in an aluminium enclosure (28).

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This invention relates to dispenser devices for dispensing predetermined quantities of a fluid substance, which can also be in a creamy state, contained in a deformable bag forming part of the dispenser device, this latter being provided with a manual suction and delivery pump which draws the substance to be dispensed from the bag.

Dispenser devices of this type are known and are described for example in the Italian utility model patent 207667. In this bag-type dispenser, as dispensing proceeds the bag wrinkles irregularly and substantially unpredictably because of the vacuum generated within it by virtue of the dispensing action. It can therefore happen that the bag deforms in such a manner as to prevent the complete extraction of the substance contained in the bag.

The dispenser illustrated in said utility model in fact also comprises a bottle which encloses the deformable container and is provided with holes in its base. These holes enable air to enter the bottle in order to prevent vacuum forming therein when the bag wrinkles. The bag has a mouth into which the lower end of a known manually operated suction and delivery pump is inserted. This latter is sealed to the mouth of the deformable bag and comprises a hollow main body, the base of which comprises an inlet hole which connects the space within the pump body to the interior of the bag. The pump body is fixed to the bottle neck by a ring cap.

On the top of the pump there is a dispenser knob to be pressed to operate the pump, to hence obtain the emergence of a predetermined quantity of the substance contained in the bag. This generates within the deformable bag a vacuum which, as already stated, causes the bag to wrinkle irregularly.

The main object of the present invention is to obviate the aforesaid drawbacks of dispenser devices of the stated type.

These known dispensers also suffer from a drawback due to the fact that neither the bag (normally of polyethylene) nor the bottle (normally of polycarbonate) is able to prevent passage of ultraviolet rays. In this respect it has in fact been found that ultraviolet rays can cause degradation of the products usually contained in the bag. In addition, certain of the products which can be contained in the deformable bag have a tendency to migrate though the polyethylene of which the bag is made.

A second object of the present invention is to obviate these further drawbacks.

Said main object is attained by the dispenser with a deformable bag according to the present invention, which is characterised in that the deformable bag is bellows-shaped.

In this manner the bag reduces in volume in a gradual and predetermined manner without the problems of known dispensers of deformable bag type arising, with the result that the entire substance contained in the bag can be dispensed.

The second said object is attained in that the deformable bag is enclosed by an aluminium enclosure provided within the bottle. In this respect, the aluminium enclosure prevents both the passage of ultraviolet rays and any outward migration of the substance contained in the deformable bag.

The present invention will be more apparent from the description of a dispenser according to the invention given hereinafter by way of example. In this description reference is made to the accompanying drawing, in which the single figure represents an axial vertical section through the dispenser with a bellows-shaped deformable bag. From this figure it can be seen that the dispenser 10 comprises an upperly open bottle 12 of overall cylindrical form, on the top of which a conventional ring cap 14 is fixed by being snap-mounted onto the bottle 12.

A conventional manual pump 16 of the type suitable for use with deformable bags is snap-fitted to the ring cap 14. The coaxial operating stem 18 of the pump 16 carries a conventional dispensing knob 20 which encloses the delivery channel (not visible in the figure). This latter communicates at one end with the axial channel (not visible) of the pump stem 18, from which the predetermined quantity of substance to be dispensed emerges. The other end of this channel opens at the free end 22 of the nose 24 of the knob 20. A conventional protection cap 26 encloses the ring cap 14 and the dispensing knob 20.

In the interior of the bottle 12 there is provided an upperly open, overall cylindrical enclosure 28 consisting of a sheet of aluminium foil possibly internally lined with a sheet of polyethylene. The polyethylene lining enables the mouth of the enclosure 28 to be welded to that of the deformable bag 30, also of polyethylene, contained in the enclosure 28.

The enclosure 28 can be dispensed with if the substance contained in the bottle 12 or rather in the deformable bag 30 is insensitive to ultraviolet rays and does not tend to migrate towards the outside of the bag 30.

The deformable bag 30 is of overall cylindrical shape, is open at its top and has a bellows-shaped lateral surface.

Its upper mouth is in the form of a flange which, when the dispenser 10 has been assembled (see figure), lies between the upper edge 36 of the bottle 12 and the lower edge of a closure diaphragm 32 fixed coaxially to the pump 16. The upper edge of the diaphragm 32 rests against an

appropriate shoulder 34 provided within the ring cap 14.

If the aluminium enclosure 28 is provided, this will also have a horizontal upper flange, which will then lie between the upper edge 36 of the bottle 12 and the flange of the bellows-shaped bag 30.

When the cap 26 is removed and the dispensing knob 20 is pressed downwards (assuming for simplicity that the compression and metering chamber provided within the pump is already filled with the substance to be dispensed), a predetermined quantity of the substance contained in said chamber emerges from the nose 24.

On releasing the dispensing knob 20, this chamber is put under vacuum so that a quantity of substance is drawn from the interior of the bag to again fill said chamber with a further dose of substance to be dispensed.

Consequently, because of the presence of the hole 30 provided in the base of the bottle, so that the exterior of the bag 30 is at atmospheric pressure, the bag volume reduces by an amount equal to the volume of the dose dispensed.

Because of the particular bellows shape of the deformable bag 30, its volume reduction results in a contraction of its lateral folds, so that its base moves upwards at each delivery.

The contraction of the bellows-shaped bag therefore occurs in a precise and predictable manner, so as not to prevent complete emptying of the contents of the bag 30.

When the last available dose has been dispensed, the bag is in a situation in which its lateral folds are in strict mutual contact, so that the bag assumes its minimum height.

In the particular case represented in the figure, the bag 30 is formed such that when in its minimum volume state its base 40 does not rest against the lower end 42 of the pump 16, in order not to prevent complete extraction of that quantity of dispensable substance still remaining in the bag.

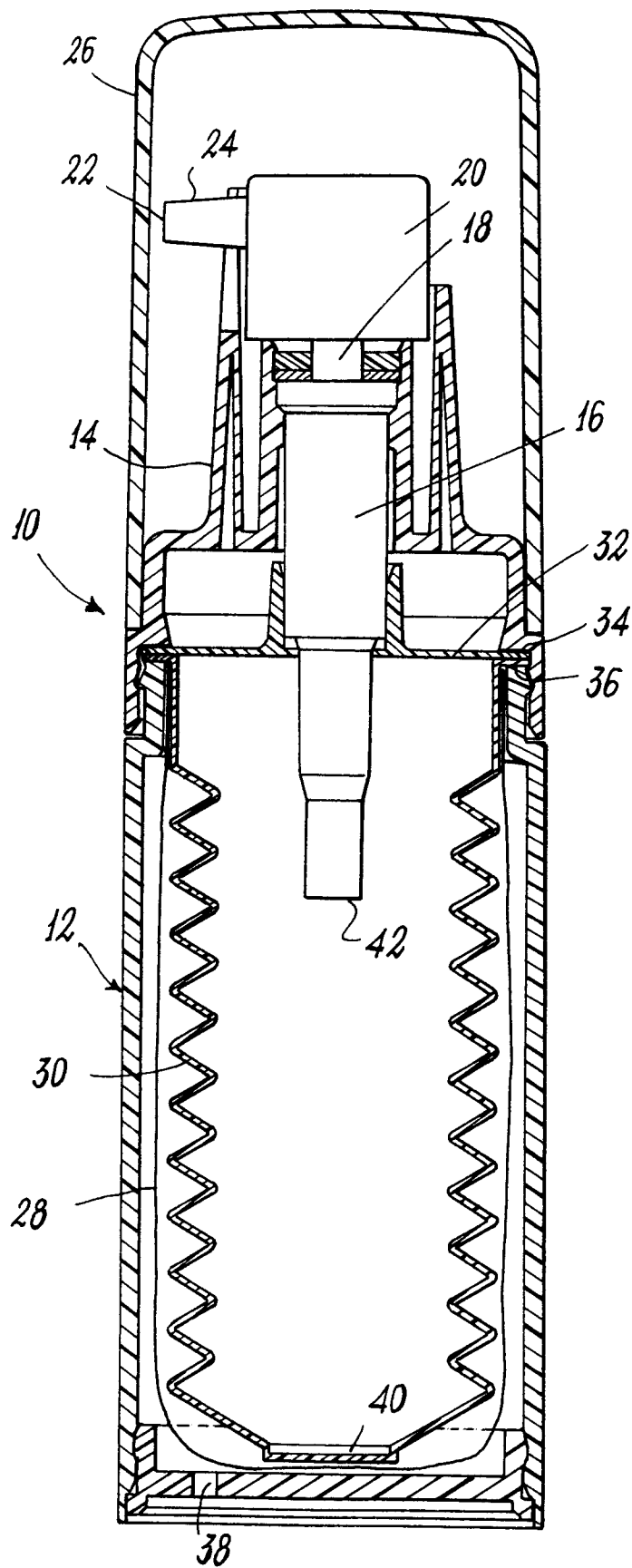
The pump 16 can also be of a type different from that shown in the figure. It can for example be of the type represented in the aforesaid Italian utility model 207667, in which the pump does not project into the bag.

characterised in that the deformable bag (30) is enclosed in an aluminium enclosure (28).

3. A dispenser device (10) as claimed in claim 2, characterised in that the aluminium enclosure (28) is lined internally with a polyethylene film.

Claims

1. A dispenser device (10) for dispensing predetermined quantities of a fluid substance contained in a deformable bag, said device being provided with a manual suction and delivery pump for drawing the substance to be dispensed from the bag, characterised in that the bag (30) is bellows-shaped.
2. A dispenser device (10) as claimed in claim 1,





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EUROPEAN SEARCH REPORT

Application Number

EP 92 10 8276

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)
P, X	WO-A-9 118 798 (RESEAL INTERNATIONAL LTD PARTNERSHIP) * page 2, line 13 - line 24 * * page 4, line 1 - line 24 * * figure 2 * ---	1	B05B11/00 B65D81/30 B65D47/34
X	GB-A-2 083 142 (PFEIFFER KUNSTSTOFFTECHNIK GMBH & CO. KG) * page 1, line 114 - line 124; figures 2,3 * ---	1	
A	FR-A-2 325 572 (EREL) * page 1, line 16 - line 20 * ---	2,3	
A	EP-A-0 381 627 (ALUSUISSE-LONZA SERVICES AG) * column 2, line 34 - column 3, line 4 * * column 4, paragraph 11 - paragraph 23 * * claims 3-8 * -----	2,3	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			B05B B65D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 19 AUGUST 1992	Examiner JUGUET J. M.
CATEGORY OF CITED DOCUMENTS			
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		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 & : member of the same patent family, corresponding document	