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(54) Bottle for at least two medication co-administered liquids

(57) A bottle (1) for at least two medication co-administered liquids of different types comprising at least two deformable containers (2) non communicating with each other for separately containing liquid medications, each of said containers (2) being provided with at least one independent opening (3) to output the liquid medications from the container (2), no mixing occurring before the liquid instillation. The two containers (2) are accommodated in a jacket (4), said jacket (4) comprising at least two compression surfaces (5) selectively movable with respect to the jacket (4) between a no compression position of the containers (2) and a maximum compression position of the containers (2) for releasing the liquid medication in a controlled manner from the openings (3), said surfaces (5) being provided with means (6) to bend to compress said containers (2). (Fig. 3)

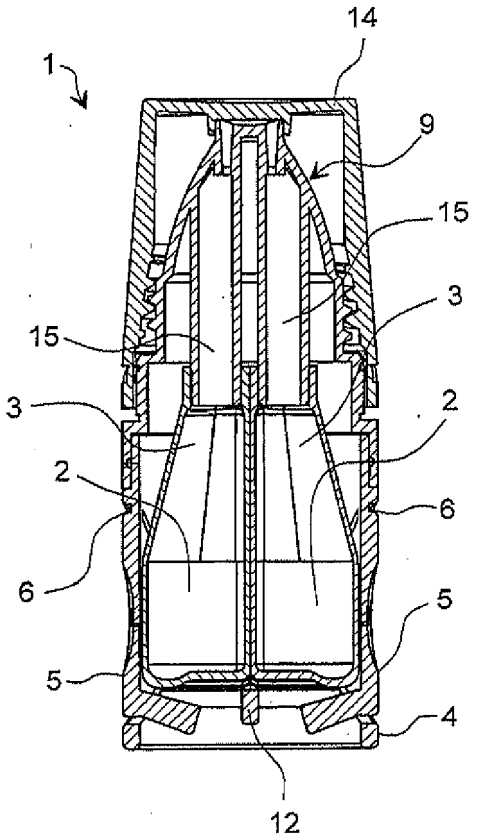

Fig.6

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Description

[0001] The present invention relates to a bottle for at least two medication co-administered liquids of different type.

[0002] In particular, reference is made to bottles directly used by patients, without the aid of medical staff, which are not reusable and are of disposable type.

[0003] Bottles comprising two separate containers for liquids, for example, are known. The usefulness of said devices lies in that liquid medications may require the separation of two liquid components until their administration or their even separate but contextual, i.e. substantially simultaneous, administration (co-administration).

[0004] Since it is not always desirable to originally mix liquid medications due to chemical or physical incompatibility, for example, the problem arises as how to dispense the medications with the aforesaid mode.

[0005] For matters of use ease which promotes compliance with the therapy by the patient, convenient and easy use by the patient is desired. For example, solutions which provide squeezing the bottle by hand are welcome and useful; these solutions exist in the known art such as bottles with press-deformable containers for liquid medications associated with one another, so that both the containers may be squeezed by hand and, with the pressure exerted by the hand, they each contextually release the liquid medication contained.

[0006] However, this solution is not accurate as the pressing surface of the hand fingers varies, and hence the force exerted on the bottles, therefore the amount of liquid medications dispensed are poorly controlled and is only acceptable in circumstances which do not require great accuracy and compliance of the proportions between the amounts of co-dispensed liquid medications of different type,

[0007] Thus the problem arises of making the liquid medication dosage more precise in liquid medication dispensers.

[0008] In conjunction with this problem, there is the need to keep the features of bottle sturdiness and construction simplicity suitable for a non-reusable bottle of disposable type.

[0009] Current practice does not meet the features desired by the applicant, who therefore devised its own version of bottle for co-dispensing several liquid medications.

[0010] Considering the state of the art, it is thus the object of the present invention to obviate the aforesaid drawbacks by providing a bottle for co-dispensing several liquid medications provided with good dosage accuracy, sturdiness and constructional simplicity.

[0011] In accordance with the invention, such an object is achieved by a bottle for at least two medication co-administered liquids of different types comprising at least two deformable containers non communicating with each other for separately containing liquid medications, each of said containers being provided with at least one independent opening to output the liquid medications out of the container, no mixing occurring before the liquid instillation, characterized in that the two containers are accommodated in a jacket, said jacket comprising at least two compression surfaces selectively movable in relation to the jacket between a no-compression position of the containers and a maximum compression position of the containers for the controlled release of the liquid medication from the openings, said surfaces being provided with means to bend to compress said containers.

[0012] These and other features of the present invention will become more apparent from the following detailed description of a practical embodiment thereof, shown by way of non-limiting example in the accompanying drawings, in which:

figure 1 shows a perspective view of a bottle according to the invention, with fins in a no compression position and a cap;
figure 2 shows a partial, exploded perspective view of the bottle with an instiller and fins in the no compression position;
figure 3 shows a perspective view with the instiller assembled and fins in a maximum compression position;
figure 4 shows a side view of a jacket with fin;
figure 5 shows an exploded perspective view of the bottle according to the invention;
figure 6 shows a vertical section view of the bottle in figure 1;
figure 7 shows figure 6 with cap, instiller and containers removed;
figure 8 shows the bottle in figure 7 with fins in the maximum compression position.

[0013] With reference to the accompanying figures, and in particular to figure 1, a bottle 1 is shown for at least two medication co-administered liquids of different type. Bottle 1 advantageously comprises a safety cap 14.

[0014] Bottle 1 comprises at least two deformable containers 2 (figure 5), for separately containing liquid medications, which are non communicating with each other; each of said containers 2 is provided with at least one independent opening 3 to output the liquid medications out of container 2, no mixing occurring before the liquid instillation.

[0015] The two containers 2 are advantageously associated, for example they are integral with each other, flexible and accommodated in a jacket 4, with respect to which they are diametrically opposite, (figure 4 in particular) which comprises at least two compression surfaces 5 selectively movable with respect to jacket 4 between a no compression position of containers 2 (figure 6 in particular) and a maximum compression position of containers 2 (figure 8 in particular, where the containers 2 have been removed for clarity) for the controlled release of the liquid medication from openings 3. Surfaces 5 are provided with means 6 to bend to compress said containers

2.

[0016] Advantageously, the compression surfaces 5 are fins 5 with a free edge 13 (figure 3) with respect to jacket 4.

[0017] The bending means 6 advantageously comprise a material with shape memory for the material of which fins 5 and jacket 4 are made. and a weakening, such as a reduced thickness of the material of jacket 4, along a attachment line 6 (figures 4, 6, 7, 8) of fins 5 to jacket 4.

[0018] Jacket 4 and fins 5 are advantageously stiff and made of polypropylene, and containers 2 are flexible and made of polyethylene.

[0019] Fins 5 in the maximum compression position of containers 2 abut against a projection 12 (figures 6, 7, 8) interposed between fins 5 and integral with jacket 4.

[0020] The two containers 2 are in communication with an instiller 9 provided with at least two separate outputs 10 (figures 2, 3, 7, 8) for liquid medications, each of the two outputs 10 being in communication with one of the openings 3 of containers 2.

[0021] Output channels 15 (figure 6 in particular) of instiller 9 are engaged on the outputs 3 of containers 2.

[0022] The operation of bottle 1 includes containers 2 being accommodated in jacket 4 while ensuring one belly 27 (figure 5) of the container being coinciding with the middle of fin 5. Instiller 9 is mounted above, with the outputs 10 fitting into the openings 3 of containers 2.

[0023] By pressing on fins 5 by hand, they compress the containers, and the liquid medications are co-dispensed from the openings 10. Fins 5 allow a better dosage of the liquid medications because fins 5 bending by an equal angle 20 (figure 8) with respect to the resting position, i.e. no compression position, may be visually controlled.

[0024] Fins 5, in one piece with jacket 4 and made of the same material but selectively movable with respect thereto, bend along the attachment line 6, due to the material weakening, with respect to jacket 4 in the no compression position of containers 2; the maximum compression position of containers 2 is recovered by releasing the pressure on fins 5 and letting the material memory act so that the fins 5 return to the no compression position.

Claims

1. Bottle (1) for at least two medication co-administered liquids of different types including at least two deformable containers (2) non communicating between each other for the separate containment of liquid medications, each one of said containers (2) being equipped with at least one independent opening (3) to output the liquid medications out of the container (2), no mixing of liquids happening before the instillation, **characterized by** the fact that the two containers (2) are housed in a jacket (4), said jacket (4) comprising at least two compression surfaces (5) selectively movable in relation to the jacket (4) between a no compressing position of the containers (2) and a position of maximum compression of the containers (2) for the controlled release of the liquid medication from the openings (3), said surfaces (5) being provided with means to bend (6) to compress said containers (2).

2. Bottle (1) according to claim 1, **characterized by** the fact that the means to bend (6) comprise a material with shape memory for the material of which the surfaces (5) and jacket (4) are made and weakening along a line of attachment (6) of the surfaces (5) to the jacket (4).

3. Bottle (1) according to claim 2, **characterized by** the fact that the areas of compression (5) are fins (5) with a free edge (13) in respect to the jacket (4).

4. Bottle (1) according to claim 3, **characterized by** the fact that the jacket (4) and fins (5) are stiff.

5. Bottle (1) according to any one of claims 3-4, **characterized by** the fact that the fins (5) in the position of maximum compression of the containers (2) abut against a projection (12) interposed between the fins (5) and integer with the jacket (4).

6. Bottle (1) according to any of the preceding claims, **characterized by** the fact that the containers (2) are flexible.

7. Bottle (1) according to any of the preceding claims, **characterized by** the fact that the containers (2) are made of polyethylene.

8. Bottle (1) according to any of the preceding claims, **characterized by** the fact that the jacket (4) and fins (5) are made of polypropylene.

9. Bottle (1) according to any of the preceding claims, **characterized by** the fact that the two containers (2) are in communication with an instiller (9) provided with at least two separated outputs (10) for liquid medications, each one of the two outputs (10) being in communication with one of the openings (3) of the containers (2).

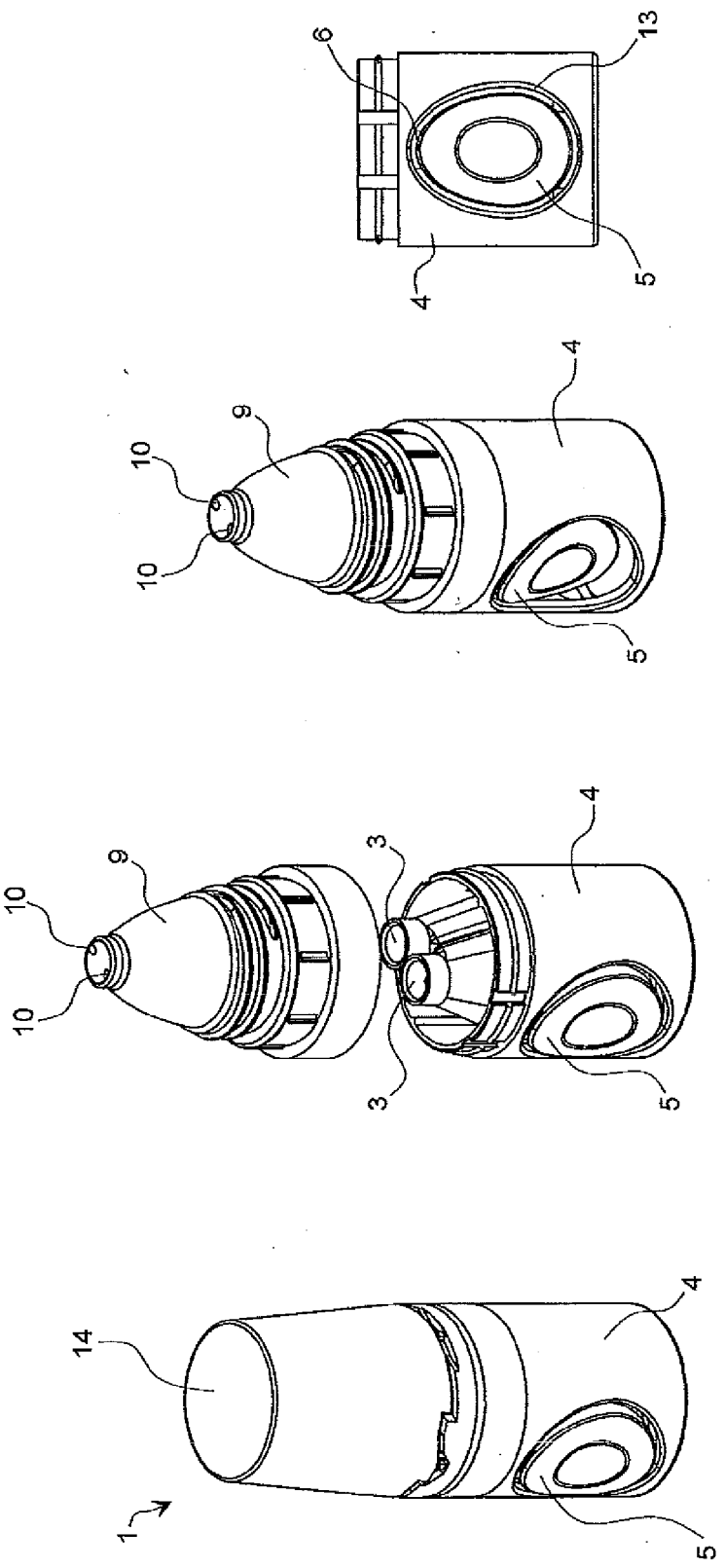

Fig.1

Fig.2

Fig.3

Fig.4

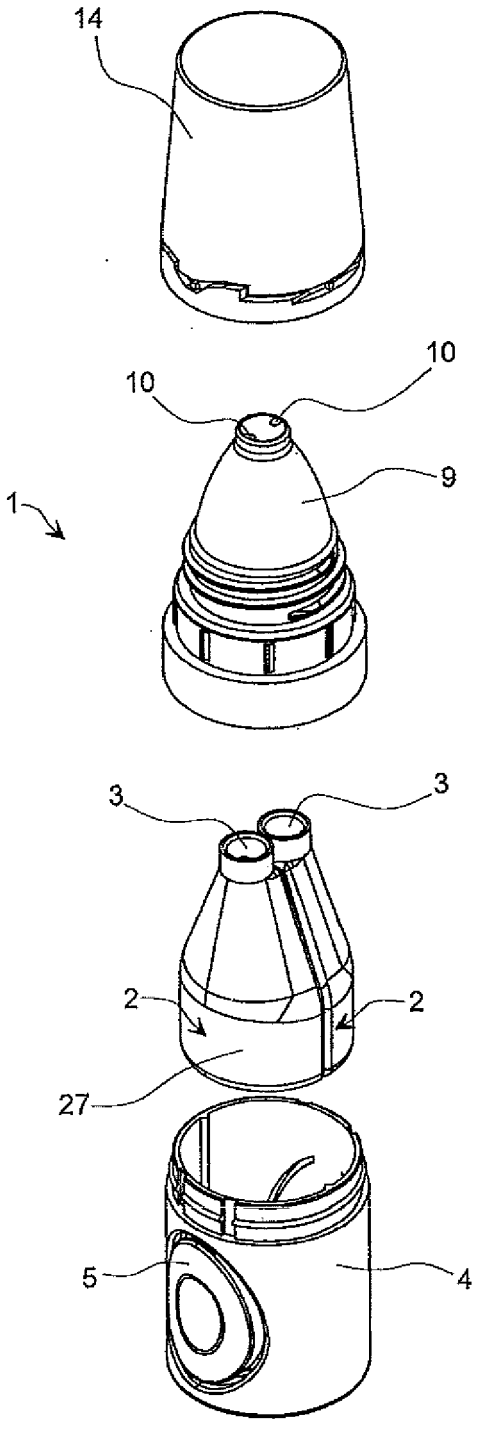

Fig.5

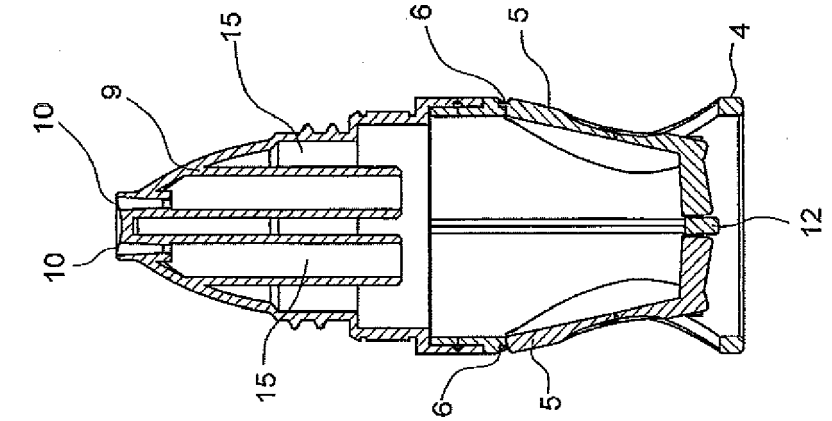

Fig.8

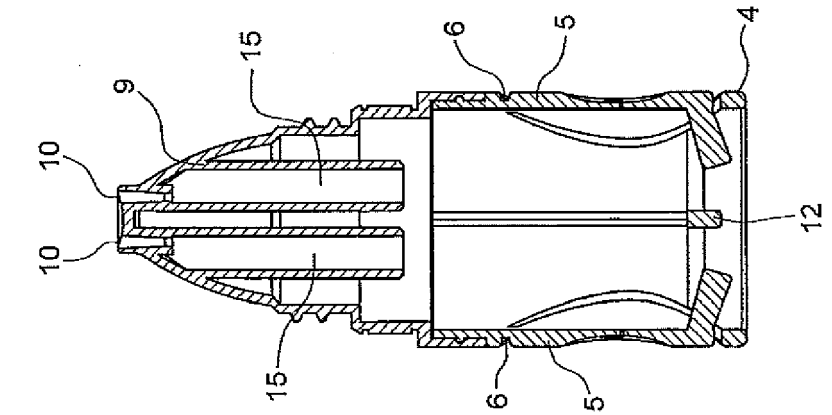

Fig.7

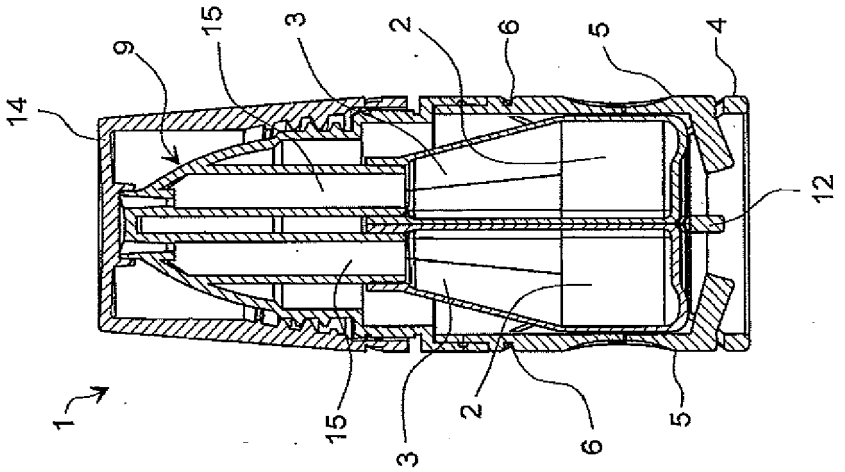

Fig.6

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EUROPEAN SEARCH REPORT

Application Number
EP 11 15 9106

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X Y	US 5 137 178 A (STOKES JAMES R [US] ET AL) 11 August 1992 (1992-08-11) * claim 1; figure 3 *	1,6-9 2	INV. B65D81/32
X	EP 0 792 820 A2 (KAO CORP [JP]) 3 September 1997 (1997-09-03) * figures 17B, 17C *	1,6-9	
Y	US 2009/179031 A1 (CHEN FANG-PIN [TW]) 16 July 2009 (2009-07-16) * paragraph [0014]; figure 1 *	2	
A	WO 99/44904 A2 (PERFECTA CHEMIE BV [NL]; WOLF PETER JOHAN [NL]; JAGER MARINUS LAURENS) 10 September 1999 (1999-09-10) * figures 2-4 *	3	

TECHNICAL FIELDS SEARCHED (IPC)

B65D
A61F
A61J
A61M

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	1 July 2011	Bridault, Alain

CATEGORY OF CITED DOCUMENTS

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01-07-2011

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5137178 A	11-08-1992	CA 2062619 A1	18-10-1992
EP 0792820 A2	03-09-1997	DE 69712248 D1	06-06-2002
		DE 69712248 T2	22-08-2002
		JP 3077135 B2	14-08-2000
		JP 9207952 A	12-08-1997
		US 5848730 A	15-12-1998
US 2009179031 A1	16-07-2009	NONE	
WO 9944904 A2	10-09-1999	AU 2861399 A	20-09-1999
		EP 1064204 A2	03-01-2001
		NL 1008486 C2	07-09-1999

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