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(71) Applicant: **Rio Mints & Sweeteners B.V.**
3526 KS Utrecht (NL)

(72) Inventor: **MAAS, Elmer Christiaan**
Utrecht (NL)

(74) Representative: **Algemeen Octrooi- en Merkenbureau B.V.**
P.O. Box 645
5600 AP Eindhoven (NL)

(54) **PACKAGING FOR TABLETS**

(57) Packaging (1) for tablets, comprising a storage container (2), a dispensing device (4) comprising a first delivery body (5) comprising at least one delivery chamber (7) for temporarily receiving a tablet to be dispensed, and a second delivery body (10) that is connected rotatably to the first delivery body, wherein by turning the second delivery body about a rotation axis (12) relative to the first delivery body, in the delivery state a tablet can be discharged from the delivery chamber, wherein the packaging comprises a central expelling body (18) that delimits each of the at least one delivery chambers on their respective internal sides.

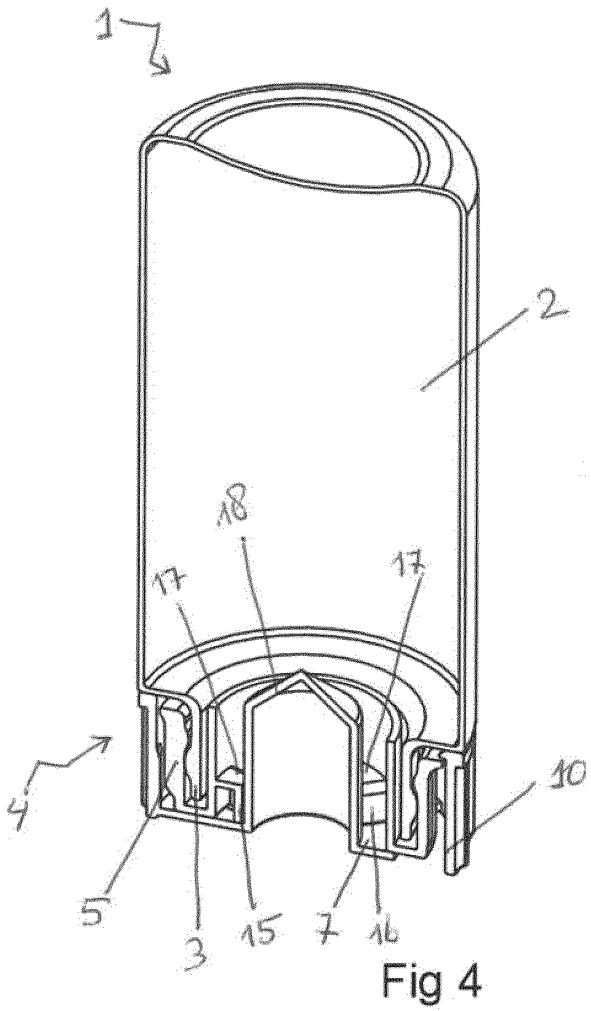

Fig 4

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Description

[0001] The invention relates to packaging for tablets such as sweetener tablets, also called sweeteners, among other things comprising a storage container with an interior for receiving the tablets therein and with a first opening for being able to remove tablets from the interior via the first opening, and a dispensing device for dispensing the tablets one at a time.

[0002] Said packaging with a dispensing device for tablets (also called a dispenser) is known per se and is generally used for dispensing sweeteners into hot drinks such as coffee and tea and the like. The known dispensing device is generally provided with a dispensing mechanism with a spring element such as a spring or a spring-mounted lip, so that by means of for example a squeezing or pressing movement with the fingers of the hand, the dispensing mechanism is activated and a tablet is dispensed into the hot drink. These known delivery devices have the drawback that separate components such as springs must be used, or that spring elements, such as spring-mounted lips, must be used, made of special springy and/or flexible materials suitable for this purpose, such as a flexible thermoplastic such as polyethylene (PE) or polyoxymethylene (POM). For the storage container for tablets and for the dispensing device, however, a stronger, harder, durable and more heat-resistant plastic is preferably used, such as a plastic based on polypropylene (PP) or polystyrene (PS). This has the drawback that the known delivery devices are often assembled from components made of different materials with different properties, such as a hard plastic such as polypropylene for the storage container and the external parts of the dispensing device, and a flexible, softer plastic such as polyethylene for the internal, springy components of the mechanism of the dispensing device. In the recycling and reuse of the materials of the packaging it is a disadvantage if several mutually different materials are used, because separation of these materials is difficult, it requires extra processing steps and there is extra energy consumption.

[0003] The aim of the invention is therefore to overcome the aforementioned drawbacks and to provide packaging with a dispensing device for tablets, where said packaging is able to deliver the tablets reliably one at a time, and yet can be made from a single plastic. Moreover, it is unnecessary to use spring components such as in dispensers according to the prior art, and the packaging can be made simply and at relatively low cost from a small number of components.

[0004] A dispensing device according to the preamble of Claim 1 is described In US 2886209.

[0005] The invention provides packaging for tablets according to Claim 1. By coupling a first delivery body and a second delivery body rotatably with respect to each other to the storage container, a dispensing device is obtained which in the delivery state delivers only one tablet from the storage container, wherein the dispensing device can be made from a single material, does not comprise spring components and can be obtained easily in a known manner such as by injection moulding of the components thereof. The expelling body ensures optimum guidance of the tablets to the delivery chamber and helps to make it easy to discharge the last tablets from the storage container.

[0006] In one embodiment, the storage container, the first delivery body and/or the second delivery body, more preferably each of the storage container, the first delivery body and/or the second delivery body, are made of plastic material.

[0007] In particular, the storage container, the first delivery body and the second delivery body are made of the same plastic material, such as in particular polypropylene. The production of the storage container may be carried out very effectively by blow moulding if it is made of polypropylene. Alternatively, it is also conceivable per se that the first delivery body, the second delivery body and the storage container are made from some other plastic such as polyethylene.

[0008] More particularly, the first delivery body and/or the second delivery body, preferably each of the first delivery body and/or the second delivery body, are produced by injection moulding. The storage container may preferably be produced by blow moulding but may alternatively also be produced suitably by injection moulding.

[0009] Preferably the storage container, the first delivery body and the second delivery body constitute the only constructional components of the packaging.

[0010] In particular the storage container, the first delivery body and the second delivery body are each made from one piece.

[0011] As a result of these measures, packaging with a dispensing device is obtained, which can be manufactured easily, at low cost, and which is environmentally friendly and can be recycled easily, and the plastic used can be reused. In addition, all components of the packaging can be manufactured from a sturdy, durable plastic, such as polypropylene, which is sturdy and heat-resistant.

[0012] According to a particular embodiment, the second delivery body is provided per fifth opening with a closing member for closing, in the delivery state relating to said fifth opening, the third opening of the associated delivery chamber.

[0013] Application of a closing member prevents several tablets to be dispensed from being able to flow out of the storage container via the third opening into the delivery chamber and more than one tablet being discharged in the delivery state when the fourth opening and the fifth opening come next to each other.

[0014] In an alternative embodiment, the first delivery body for each delivery chamber is provided with two delimiting parts with sides facing each other, the respective delivery chamber being located between said sides facing each other, and wherein each of the two delimiting parts has, on the side of the third opening of the delivery

chamber, a supporting surface, on which the tablets to be dispensed may lie when the packaging is in use.

[0015] In particular when the second delivery body turns relative to the first delivery body, the closing member moves from the delivery state belonging to a delivery chamber, along at least one of the two supporting surfaces belonging to the respective delivery chamber.

[0016] By forming the delivery chamber between two delimiting parts, and providing these delimiting parts with a supporting surface, tablets may lie on these supporting surfaces, and through the turning motion the closing member may be moved from the supporting surface into the delivery chamber, so that the likelihood of absence of a tablet in the delivery chamber is reduced considerably.

[0017] In particular the closing member extends from the central expelling body. By providing the expelling body on the second delivery body, the two components can be combined advantageously so that by turning the second delivery body relative to the first delivery body, the closing member moves along the supporting surface of one of the delimiting parts, in order to move a tablet, located on the supporting surface, into the empty delivery chamber.

[0018] Preferably the central expelling body and a circumferential wall of the first delivery body define a circumferential collecting space that is connected to each of the delivery chambers via the respective third openings thereof.

[0019] The circumferential collecting space promotes a good flow of tablets to the delivery chamber(s), so that the likelihood of the presence of a tablet in the delivery chamber(s) is increased and therefore the reliability of the dispensing device is increased for being able to deliver a tablet on rotation of the second delivery body.

[0020] In particular, the first delivery body comprises at least two delivery chambers, preferably two, three or four delivery chambers, which are provided mutually at equal angular positions from each other relative to the rotation axis.

[0021] By providing two or more delivery chambers in the first delivery body, a slight rotation of the second delivery body by the user may be sufficient for dispensing a tablet from the delivery chamber.

[0022] In a special embodiment, the second delivery body is connected infinitely rotatably to the first delivery body.

[0023] As a result, by turning the second delivery body both left and right, whether or not continuously or alternately, a tablet can be delivered from the delivery chamber.

[0024] The present invention will be explained in more detail hereunder, on the basis of the description of a possible embodiment of packaging according to the invention, referring to the following figures:

Figs. 1a, 1b and 1c show an isometric view of packaging according to the invention, as assembled, in a partially exploded view and in a fully exploded view, respectively;

Figs. 2a, 2b and 2c show the outer dispensing cap (second delivery body) as forming part of the packaging according to Figs. 1a to 1c in isometric view, in side view and in bottom view, respectively;

Figs. 3a, 3b and 3c show an inner dispensing cap (first delivery body) as forming part of the packaging according to Figs. 1a to 1c in isometric view, in side view and in bottom view, respectively;

Fig. 4 shows the packaging according to Fig. 1a in isometric longitudinal section;

Figs. 5a, 5b and 5c show the subassembly of the outer dispensing cap (second delivery body) and the inner dispensing cap (first delivery body) in isometric longitudinal section as in Fig. 4, in bottom view and in top view, respectively.

[0025] Packaging 1 according to Fig. 1a, also to be referred to as a dispenser, comprises three, at least substantially cylindrical, components, namely an elongated storage container 2, an inner dispensing cap 5, i.e. first delivery body 5, and an outer dispensing cap 10, i.e. second delivery body 10. In this example the three components are made from an identical plastic, such as polypropylene, by injection moulding. The storage container 2 could also be manufactured very suitably by blow moulding. Packaging 1 is configured to be able to deliver tablets such as sweeteners or the like individually, one at a time to a user of the packaging, for example to dispense a sweetener into a hot drink such as coffee or tea.

[0026] Figs. 1a, 1b, 1c show a storage container 2 with an interior for receiving the tablets therein. The storage container 2 is connected to dispensing device 4. Figs. 1b, 1c show the storage container 2 separately from the dispensing device 4. The storage container 2 is provided with a first opening 3 for being able to remove tablets from the interior of the storage container 2 via this first opening.

[0027] The dispensing device 4 is arranged for reliable delivery of the tablets one at a time. The dispensing device comprises a first delivery body 5 (inner dispensing cap) with a second opening 6, said first delivery body 5 being connected to the storage container 2 in such a way that the first opening 3 and the second opening 6 come next to each other and the tablets can flow easily from the storage container 2 to the dispensing device 4. The first delivery body 5 comprises a delivery chamber 7 for temporarily receiving a tablet to be dispensed. Preferably the delivery chamber 7 is dimensioned so that only one tablet can be received in the chamber. The delivery chamber 7 is provided with a third opening 8 on the side of the storage container 2. Furthermore, the delivery chamber 7 is provided with a fourth opening 9 on the side of the second delivery body 10; the third opening 8 and the fourth opening 9 are provided on opposite sides of the delivery chamber 7.

[0028] The second delivery body 10 (i.e. outer dispens-

ing cap) is connected rotatably to the first delivery body 5, in such a way that by turning the second delivery body 10 about a rotation axis 12 (see Figs. 2b, 2c) relative to the first delivery body 5, the second delivery body 10 can be brought into at least one delivery state and into at least one blocking state. The second delivery body 10 is provided with at least one fifth opening 11 and with at least one closing part 14. In the delivery state, the fifth opening 11 of the second delivery body 10 connects to the fourth opening 9 of a delivery chamber 7 of the first delivery body 5 for being able to deliver a tablet from the delivery chamber 7 via this fourth opening 9 and fifth opening 11. In the blocking state, the closing part 14 of the second delivery body 10 connects to the fourth opening 9 of the delivery chamber 7 of the first delivery body 5 for closing the delivery chamber 7 on the side of the fourth opening 9.

[0029] When a user wants a tablet, such as a sweetener, to be dispensed by the packaging 1, the user turns the packaging 1 to a substantially vertical position as shown in Fig. 1a, so that the tablets in the interior of the storage container 1 will flow from the first opening 3 to the second opening 6 of the dispensing device 4. One of the tablets will then fall through the third opening 8 into the delivery chamber 7. Preferably the delivery chamber 7 is dimensioned so that only one tablet is received in the chamber. Then the user turns the second delivery body 10 relative to the first delivery body 5 about the rotation axis 12, in such a way that the fifth opening 11 of the second delivery body connects to the fourth opening 9 of the first delivery body 5, so that the tablet present in the delivery chamber 7 will fall out through the fourth opening 9 and the fifth opening 11. When the packaging 1 is positioned above a cup with a hot drink, the tablet, for example a sweetener, will fall directly from the packaging 1 through the dispensing device 4 into the hot drink. Optionally the user may then turn the second delivery body 10 again about the rotation axis 12 relative to the first delivery body 5 so that the blocking state is reached and the closing part 14 closes the fourth opening 9 to the delivery chamber 7.

[0030] Figs. 2, 2b and 2c show the second delivery body 10 (also referred to as outer dispensing cap) in more detail. On the underside of the second delivery body 10, the fifth opening 11 is shown, and in addition a closing part 14. In the embodiment example shown, the second delivery body 10 is provided with an expelling body 18. In the assembled position of the dispensing device, the expelling body 14 extends into the first delivery body 5 (see Figs. 4, 5a). The cylindrical side wall 21 of the expelling body 14 forms the inside or internal wall of the delivery chamber 7. In the embodiment shown in Figs. 2a-2c, the expelling body 18 is provided with a conical shape at the top. A closing member 13 is shown in the bottom view in Fig. 2c; this is visible through the fifth opening 11. Next to the fifth opening 11, a closed part, closing member 13, of the second delivery body 10 is shown. By turning the second delivery body 10 about the rotation axis 12, both the fifth opening 11 and the expelling body 18, and the closing member 13 are turned. Preferably the closing member 13 is connected to the expelling body 18 and the closing member extends radially, perpendicularly to the cylindrical side wall 21 of the second delivery body 10. The closing member 13 is fitted above the fifth opening 9, so that in the delivery state of the dispensing device 4 the closing member 13 closes the third opening 8 of the delivery chamber 7 and prevents several tablets being discharged simultaneously through the fifth opening 9.

[0031] The first delivery body 5 is shown in more detail in Figs. 3a, 3b, 3c. Fig. 3a shows a delivery chamber 7, which is formed between two delimiting parts 15. These delimiting parts 15 are provided with two sides 16, which extend towards each other radially relative to the rotation axis 12. These delimiting parts 15 are provided on their upper side, on the side of the storage container 2, with a supporting surface 17 (see Figs. 4, 5a, 5c). The supporting surface 17 and the closing member 13 are provided in the dispensing device 4 in such a way that on turning the second delivery body 10 relative to the first delivery body 5, the closing member moves along the supporting surface 17 and a tablet moves from the supporting surface 17 into the delivery chamber 7, if there is still no tablet present in the delivery chamber 7.

[0032] Fig. 4 shows, in longitudinal section, the packaging 1 according to the invention from Fig. 1a in the assembled state. In the first opening 3 of the storage container 2, the dispensing device 4 is fitted as the assembly of the first delivery body 5 and the second delivery body 10. Fig. 5a shows the dispensing device 4 separately from the storage container 2. Figs. 4 and 5a show that the expelling body 18 of the second delivery body 10 extends through the first delivery body 5 into the storage container 2. The cylindrical side wall 21 of the expelling body 18 forms the radial internal side 19 of the delivery chamber 7. The radial external side of the delivery chamber 7 is formed by a circumferential wall 20 of the first delivery body 5. The delimiting parts 15, whose sides 16 define the sides of the delivery chamber 7, are fitted in the annular space between the cylindrical side wall 21 and the circumferential wall 20. On their upper sides, the delimiting parts 15 are provided with a supporting surface 17, on which tablets received from the storage container 2 can lie.

[0033] Figs. 5b, 5c show the bottom view and the top view of the dispensing device 4 according to the invention. In this example, three delivery chambers 7 are provided between three delimiting parts 15, wherein the delivery chambers 7 are provided at mutually equal angular positions from one another relative to the rotation axis 12. In the bottom view in Fig. 5b, the closing member 13 and a delivery chamber 7 are visible through the fifth opening 11 on the underside of the second delivery body 10. Next to the fifth opening 11 there is a closing part 14, which can close the fifth opening 11 and the delivery chamber 7 by turning the second delivery body 10 about the rotation axis. In the top view in Fig. 5c, three support-

ing surfaces 17 can be seen, with the three delivery chambers 7 located between them. The delivery chambers 7 are formed between two sides 16 of two delimiting parts 15, circumferential wall 20 of the first delivery body 10, and cylindrical side wall 21 of expelling body 18 of the second delivery body 5.

[0034] In the embodiment of the packaging according to the invention shown, the packaging is formed by three constructional parts, which can easily be made from one piece in the same plastic material by injection moulding and/or blow moulding. Good results are obtained by making all three constructional parts from a durable, easily recyclable (co)polymer based on polypropylene.

Claims

1. Packaging (1) for tablets, comprising

    - a storage container (2) with an interior for receiving the tablets therein and with a first opening (3) for being able to remove tablets from the interior via the first opening,
    - a dispensing device (4) for dispensing the tablets one at a time, the dispensing device comprising

        ◦ a first delivery body (5) with a second opening (6), said first delivery body (5) being connected to the storage container (2) in such a way that the first opening (3) and the second opening (6) come next to each other, the first delivery body (5) further comprising at least one delivery chamber (7) for temporarily receiving a tablet to be dispensed, wherein each of the at least one delivery chamber (7) on the side of the storage container (2) has a third opening (8) and on the opposite side of the delivery chamber (7) has a fourth opening (9),
        ◦ a second delivery body (10) with at least one fifth opening (11) and with at least one closing part (14), said second delivery body (10) being connected rotatably to the first delivery body (5) wherein by turning the second delivery body (10) about a rotation axis (12) relative to the first delivery body (5), the second delivery body (10) can be brought into at least one delivery state and into at least one blocking state wherein in the at least one delivery state a fifth opening (11) of the at least one fifth opening (11) connects to the fourth opening (9) of a delivery chamber (7) of the at least one delivery chamber (7) for being able to deliver a tablet from the respective delivery chamber (7) via the respective fourth opening (9) and fifth opening (11) and wherein in the at least one blocking state a closing part (14) of the at least one closing part (14) connects to the fourth opening (9) of a delivery chamber (7) of the at least one delivery chamber (7) for closing the delivery chamber (7) on the side of the fourth opening (9),

    wherein the packaging (1), preferably the second closing body (10) thereof, comprises a central expelling body (18) that delimits each of the at least one delivery chambers (7) on their respective internal sides (19).

2. Packaging according to Claim 1, wherein the storage container (2), the first delivery body (5) and/or the second delivery body (10), preferably each of the storage container (2), the first delivery body (5) and/or the second delivery body (10), are made of plastic material.

3. Packaging according to Claim 1 or 2, wherein the storage container (2), the first delivery body (5) and the second delivery body (10) are made of the same plastic material, preferably polypropylene.

4. Packaging according to Claim 1, 2 or 3, wherein the first delivery body (5) and/or the second delivery body (10) are produced by injection moulding and/or wherein the storage container is produced by blow moulding.

5. Packaging according to one of the preceding claims, wherein the storage container (2), the first delivery body (5) and the second delivery body (10) constitute the only constructional components of the packaging.

6. Packaging according to one of the preceding claims, wherein the storage container (2), the first delivery body (5) and the second delivery body (10) are each made from one piece.

7. Packaging according to one of the preceding claims, wherein the second delivery body (10) is provided per fifth opening (11) with a closing member (13) for closing the third opening (8) of the associated delivery chamber (7) in the delivery state relating to said fifth opening (9).

8. Packaging according to one of the preceding claims, wherein the first delivery body (5) is provided for each delivery chamber (7) with two delimiting parts (15) with sides facing each other (16), with the respective delivery chamber (7) located between said sides facing each other (16), and wherein each of the two delimiting parts (15) has, on the side of the third opening (8) of the delivery chamber, a supporting surface (17) for the tablets to be dispensed to lie on

during use of the packaging (1).

9. Packaging according to claim 7 and according to claim 8, wherein on turning the second delivery body (10) relative to the first delivery body (5), from the delivery state belonging to a delivery chamber (7), the closing member (13) moves along at least one of the two supporting surfaces (17) belonging to the respective delivery chamber (7).

10. Packaging according to claim 7, wherein the closing member (13) extends from the central expelling body (18).

11. Packaging according to one of the foregoing claims, wherein the central expelling body (18) and a circumferential wall (20) of the first delivery body (5) define a circumferential collecting space (21) that connects to each of the delivery chambers (7) via the respective third openings (8) thereof.

12. Packaging according to one of the preceding claims, wherein the first delivery body (5) comprises at least two delivery chambers (7), preferably two, three or four delivery chambers (7), which are provided mutually at equal angular positions of each other relative to the rotation axis (12).

13. Packaging according to one of the preceding claims, wherein the second delivery body (10) is connected infinitely rotatably to the first delivery body (5).

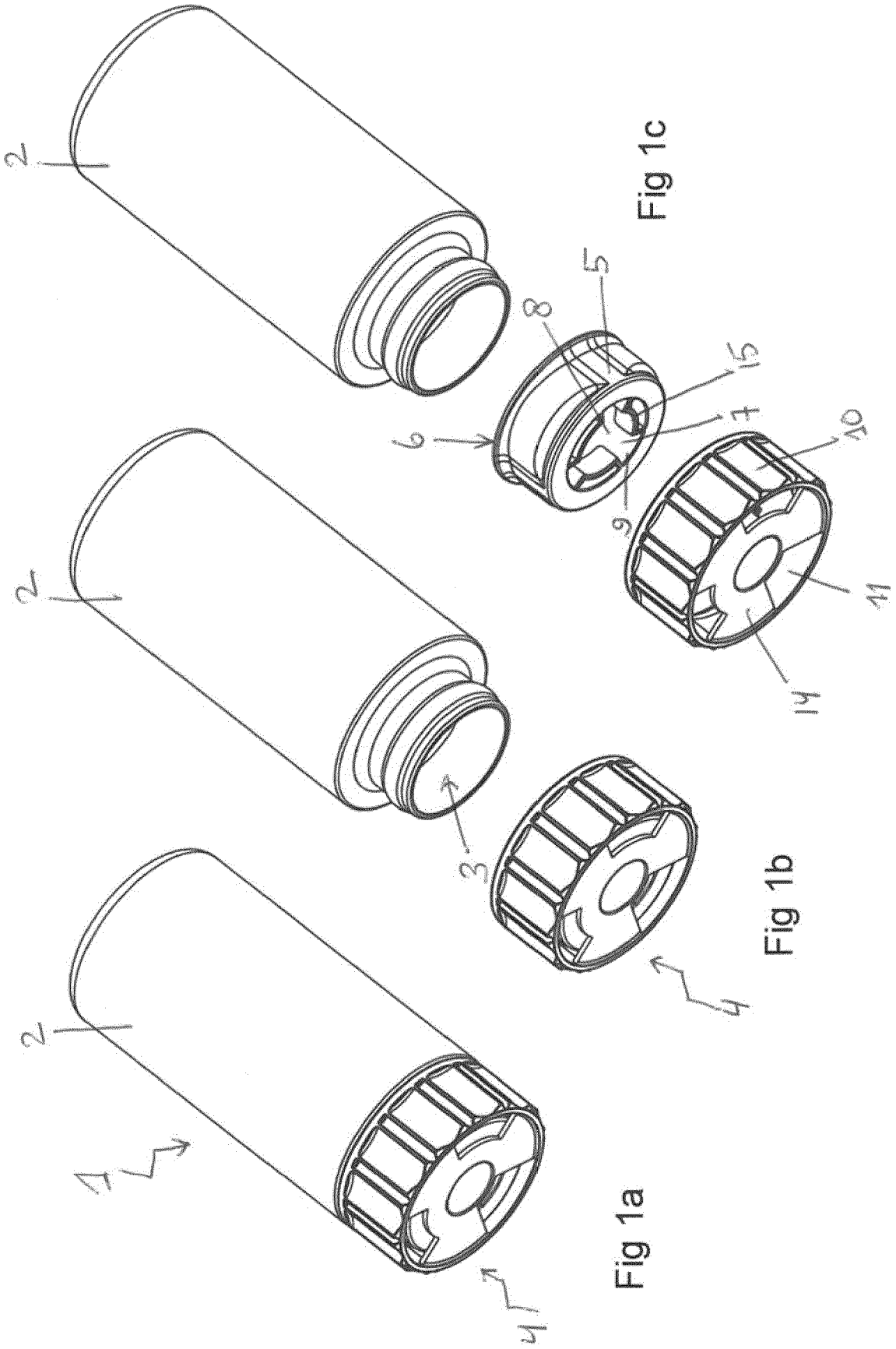

Fig 1a

Fig 1b

Fig 1c

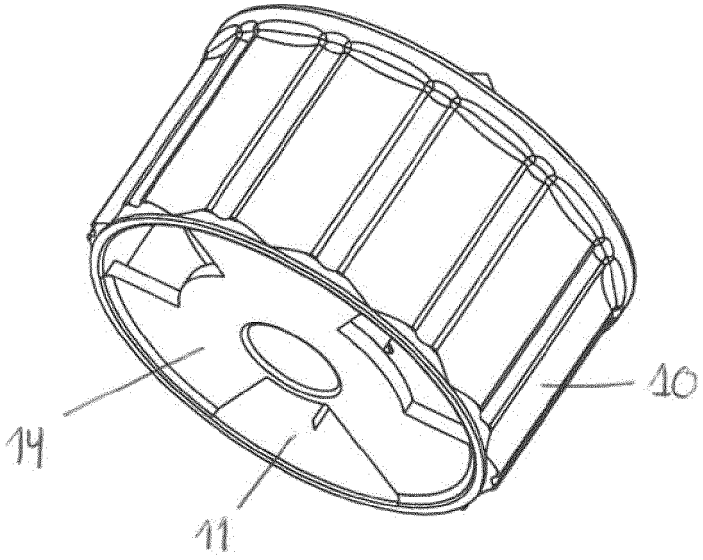

Fig 2a

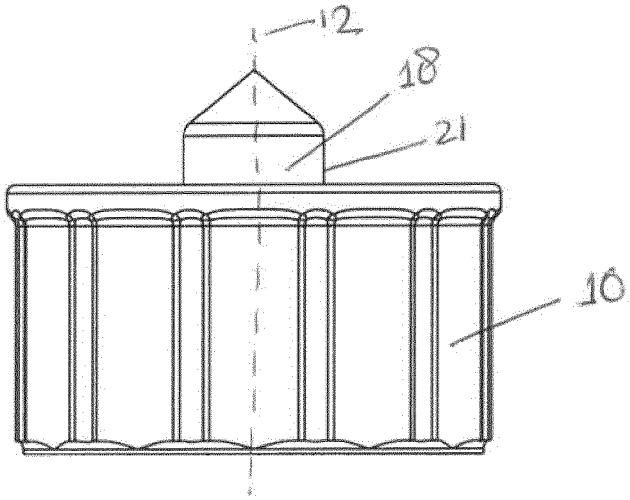

Fig 2b

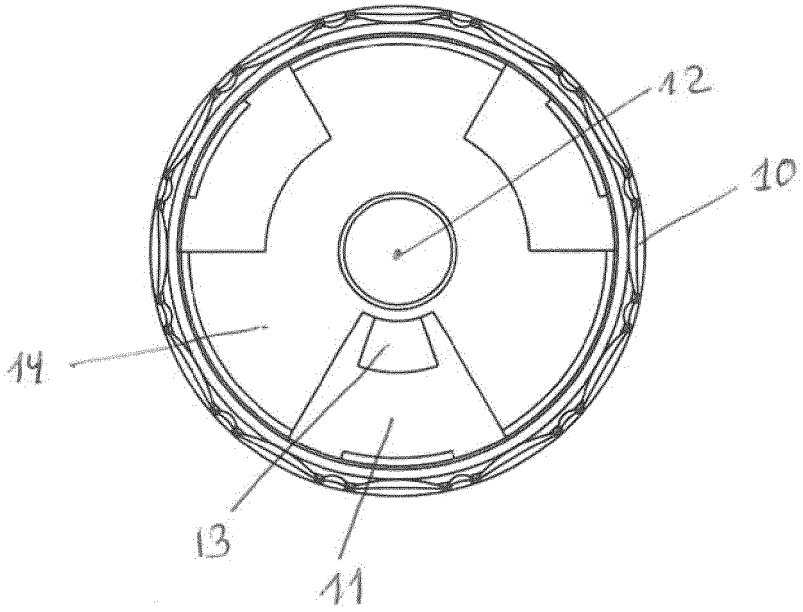

Fig 2c

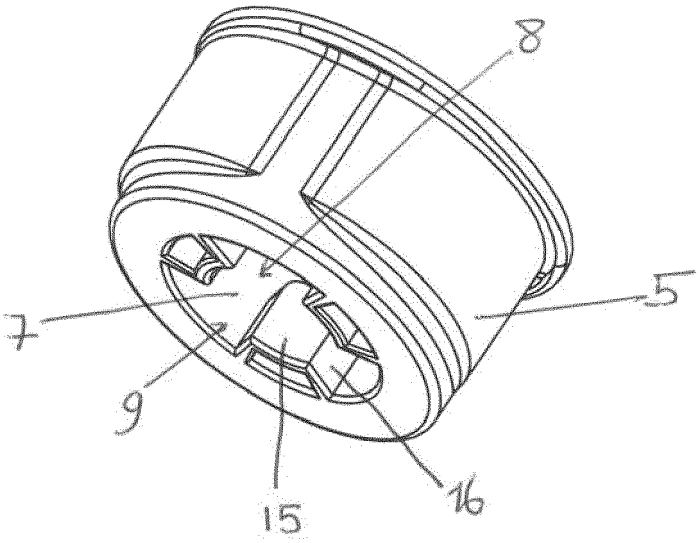

Fig 3a

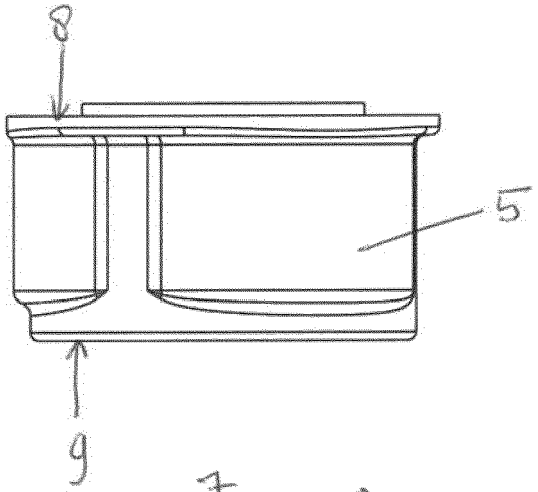

Fig 3b

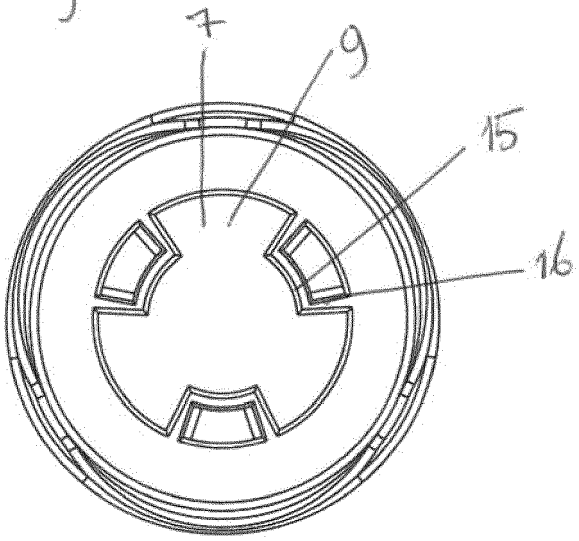

Fig 3c

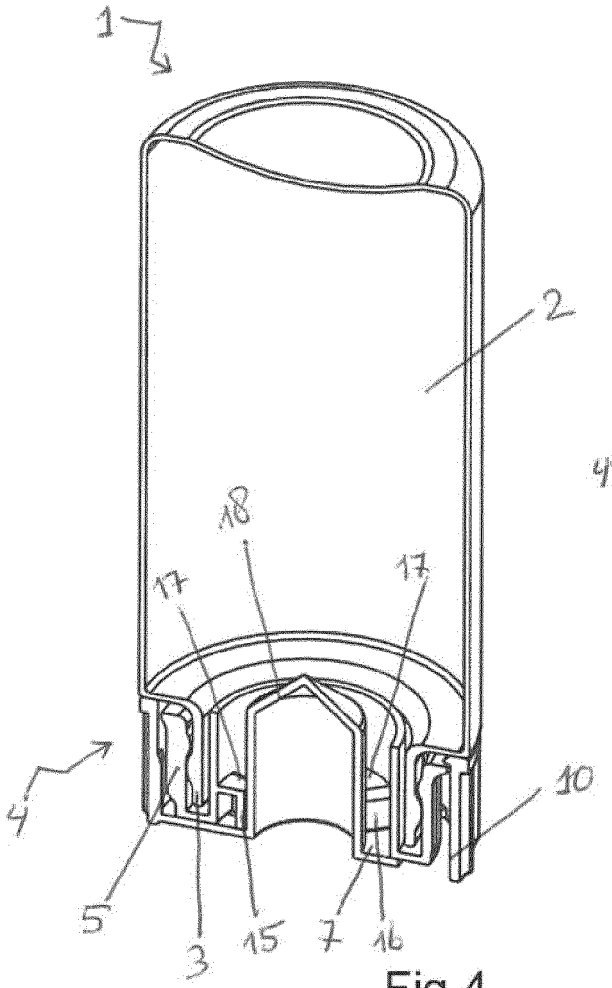

Fig 4

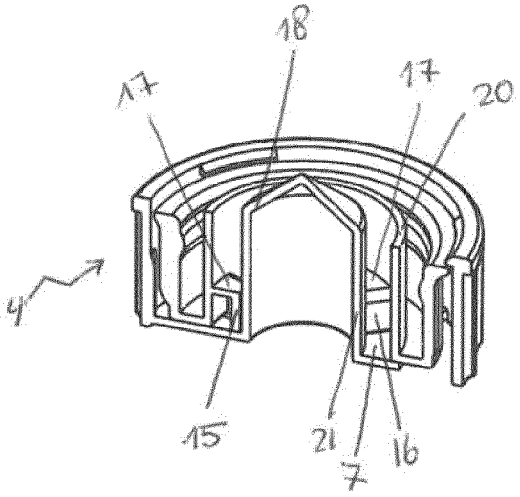

Fig 5a

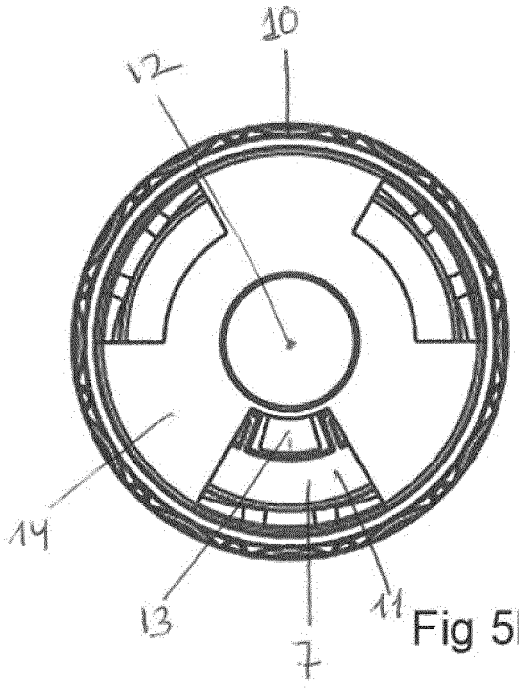

Fig 5b

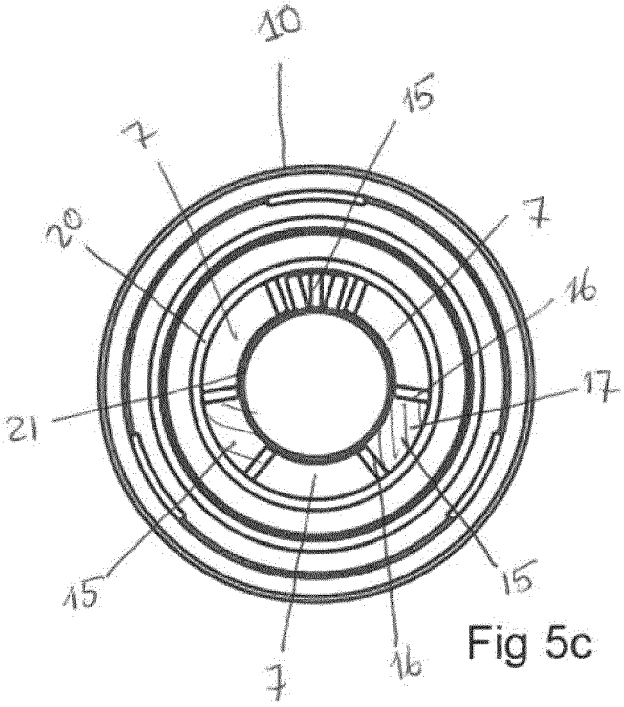

Fig 5c

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EUROPEAN SEARCH REPORT

Application Number
EP 23 15 5646

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A,D	US 2 886 209 A (LERMER HERMAN B) 12 May 1959 (1959-05-12) * column 1, line 47 - column 3, line 3; figures 1-5 *	1-13	INV. B65D83/04
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			TECHNICAL FIELDS SEARCHED (IPC) B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	6 July 2023	Leijten, René

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 23 15 5646

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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REFERENCES CITED IN THE DESCRIPTION

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