



US 20100206911A1

(19) **United States**

(12) **Patent Application Publication**
Bernhard

(10) **Pub. No.: US 2010/0206911 A1**

(43) **Pub. Date: Aug. 19, 2010**

(54) **DISPENSING DEVICE**

(30) **Foreign Application Priority Data**

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Aug. 29, 2007 (DE) 10 2007 049 868.5

Oct. 31, 2007 (DE) 10 2007 051 982.8

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Publication Classification

(51) **Int. Cl.**
B65D 83/62 (2006.01)

(73) Assignee: **SEAQUIST PERFECT**
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(52) **U.S. Cl.** **222/386.5; 222/387**

(57) **ABSTRACT**

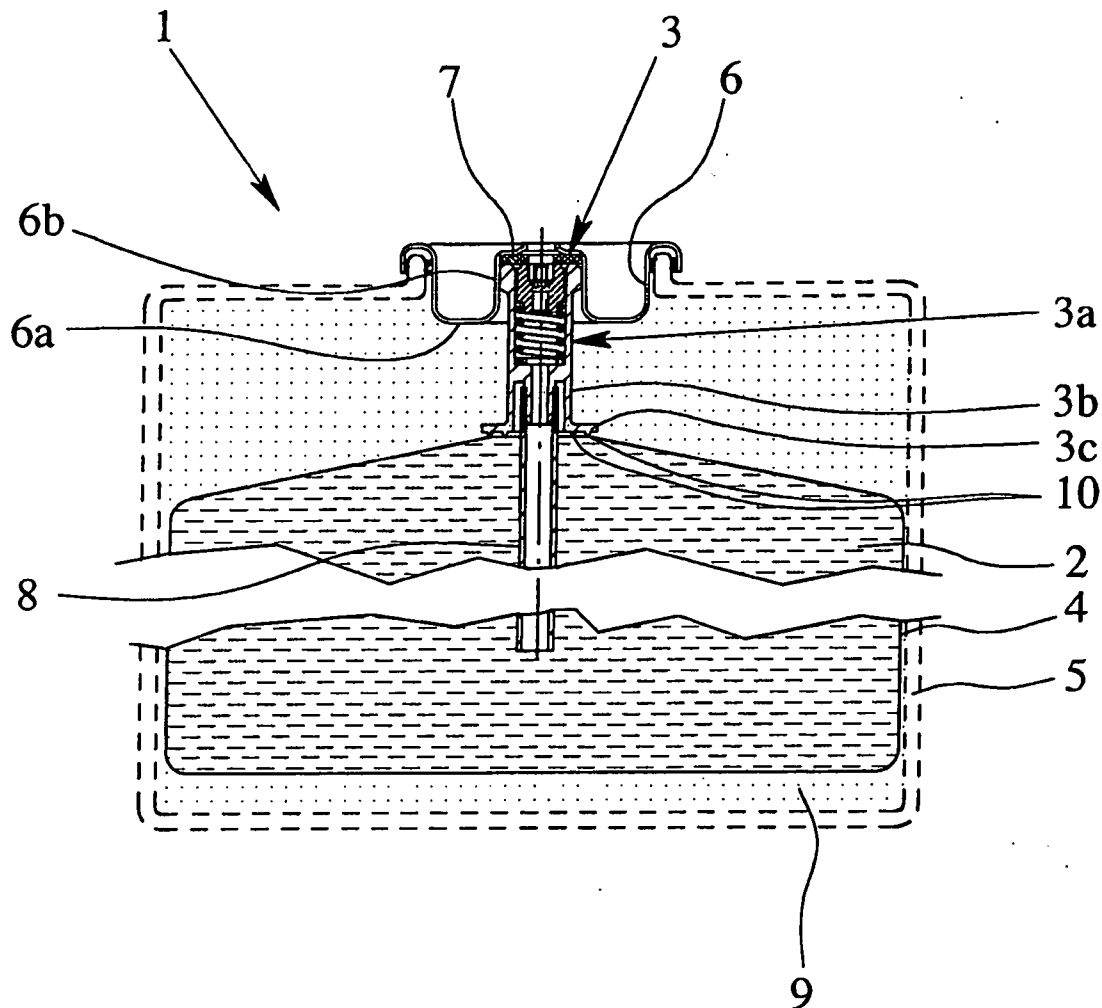
(21) Appl. No.: **12/675,229**

(22) PCT Filed: **Aug. 25, 2008**

(86) PCT No.: **PCT/EP08/06957**

§ 371 (c)(1),
(2), (4) Date: **Apr. 27, 2010**

Proposed is a dispensing device for a cosmetic product. A flexible inner container is ultrasonically welded with a valve housing. The valve housing is provided with a welding bead which is covered by the inner container during welding. The valve housing has a plate-like connecting section which is welded with an outer side of the inner container.



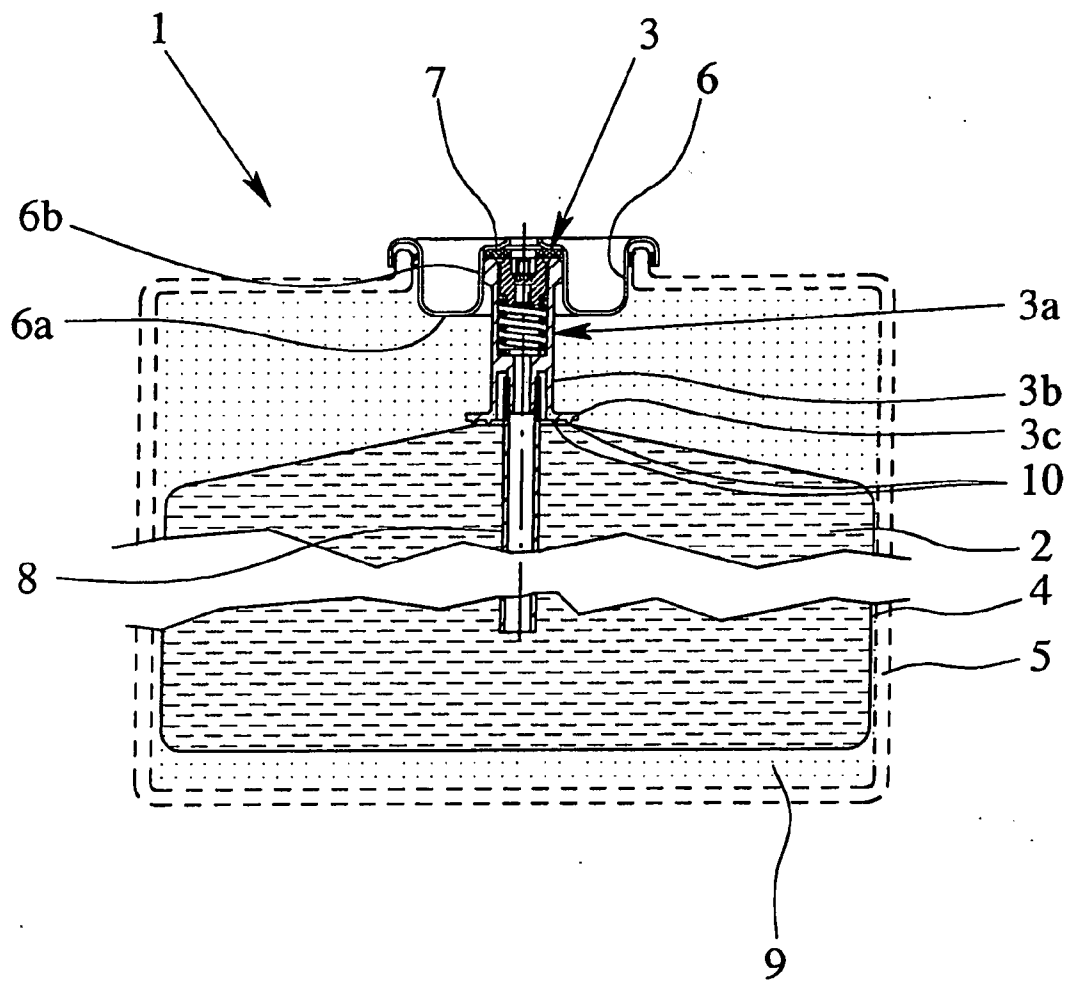


Fig. 1

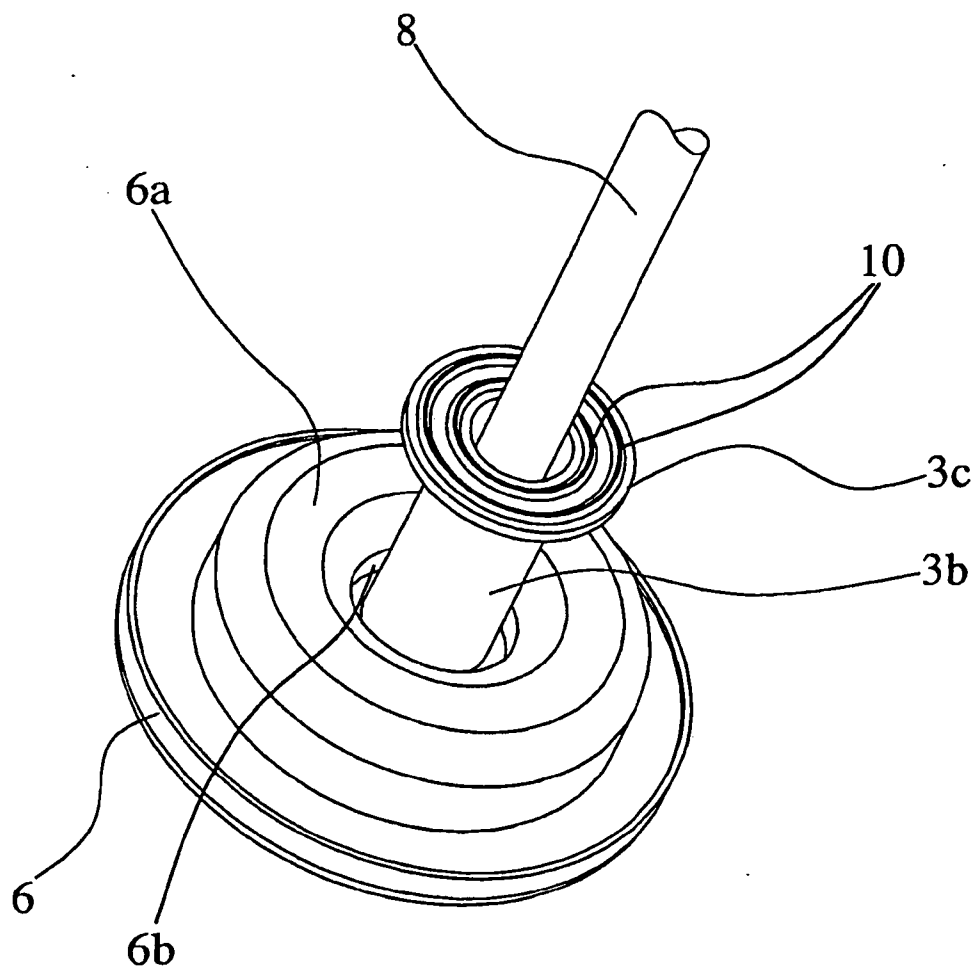


Fig. 2

DISPENSING DEVICE

[0001] The present invention relates to a dispensing device for a preferably cosmetic product according to the preamble of one of the independent claims.

[0002] The dispensing device is preferably used for the non-spraying delivery or dispensing of a preferably cosmetic product. However, spraying delivery can also be provided.

[0003] The term "cosmetic product" is to be understood, in a narrower sense, as cosmetics, hair spray, hair lacquer, a deodorant, a foam, particularly shaving foam, a gel, a color spray, a sun protection or skin care agent or the like or other cosmetic liquids, fluids, pastes, lotions, emulsions or the like. Preferably, however, in a broader sense, other body care products, cleaning products or the like, and even suspensions and fluids, particularly those with gas phases, are included as well. Moreover, other liquids, for example air improvers and particularly technical liquids and fluids as well such as anti-seizes and the like, can also be used. Nonetheless, for the sake of simplicity and due to the emphasized use, there is often only mention of cosmetic product in the following. Especially preferably, the proposed dispensing device is used for the storage and delivery of a gel, particularly shaving gel, or a paste, particularly toothpaste, or the like.

[0004] EP 0 320 510 B1 discloses a dispensing device with a valve which has a valve housing. The valve housing is provided with a tubular section with side wings extending radially on opposing sides. A baglike, flexible inner container is welded to the side wings and the tubular section by means of thermal welding. The valve is held by a plate which is joined with the outer container in a gas-tight manner. Pressure is exerted on the inner container by gas in the outer container in order to enable the delivery of a cosmetic product contained in the inner container. To facilitate good thermal welding, the valve housing and the inner wall of the inner container are preferably manufactured from polypropylene. The diffusion behavior poses a problem. In particular, polypropylene is not diffusion-tight, particularly with respect to oxygen. Accordingly, long-term storage can be problematic, since oxygen can diffuse into a valve space through the valve housing and lead to undesirable reactions, particularly in the case of a cosmetic product in the inner container. To counteract this undesirable effect, it is necessary to design the valve housing with very thick walls. This is disadvantageous, however, with regard to material costs and construction size.

[0005] It is the object of the present invention to provide an improved dispensing device which enables simplified and/or more cost-effective manufacture with respect to the prior art and/or which can be used universally, particularly with other materials as well.

[0006] The above object is achieved through a dispensing device according to one of the independent claims. Advantageous modifications are the subject of the subclaims.

[0007] A first aspect of the present invention is characterized in that the valve housing has an at least substantially level and/or thin and/or flange-like and/or plate-like connecting section, with which the inner container is preferably exclusively welded or connected. Alternatively or in addition, the inner container is connected with the valve housing only on the outside. This permits an optimized, particularly simplified and more cost-effective manufacture of the dispensing device, since the inner container can be connected, especially preferably by means of ultrasonic welding, with the valve

housing or its connecting section in a substantially simpler or better and more defined manner in comparison to the prior art.

[0008] Particularly, the preferably at least substantially level connecting section is connected only with one flat side with an outer side of the inner container. This simplifies manufacture, since the inner container need only be connected with the valve housing with one wall and not with two walls as in the prior art.

[0009] According to a second aspect of the present invention which can also be implemented independently, at least one welding bead is arranged or formed on the valve housing prior to welding, which is covered during welding by the inner container. This, again, is conducive to simple and cost-effective manufacture, particularly to the welding of the inner container with the valve housing by means of ultrasound.

[0010] According to another aspect of the present invention, the inner container is ultrasonically welded with the valve housing. Moreover, polyethylene or polyamide is preferably used for the valve housing and the inner layer of the inner container. In this way, simplified and cost-effective manufacture is made possible; particularly, the valve housing can be designed such that it is thinner with equally good or even better diffusion tightness.

[0011] Further advantages, features, characteristics and aspects of the present invention follow from the claims and the following description of a preferred embodiment on the basis of the drawing.

[0012] FIG. 1 shows a schematic section of a proposed dispensing device; and

[0013] FIG. 2 shows a schematic perspective view of a valve of the dispensing device.

[0014] In the not wholly true-to-scale, only schematic figures, the same reference symbols are used for same or similar parts, with corresponding or comparable characteristics and advantages being achieved even if a repeated description is omitted.

[0015] In a schematic view, FIG. 1 shows a proposed dispensing device 1 for dispensing a preferably cosmetic product 2 in the sense named at the outset. The product 2 is particularly a shaving gel, toothpaste, or the like.

[0016] The dispensing device 1 has a valve 3 through which the product 2 can be delivered. As needed, the valve 3 can be embodied as a dosing valve or the like. It can be opened, for example, by depressing a delivery head (not shown) connected thereto or in another appropriate manner. In particular, the product 2 can be delivered via the valve 3 or a delivery head or the like in liquid or pasty form, as foam, as gel or the like.

[0017] The dispensing device 1 has a flexible inner container 4 as indicated schematically in FIG. 1. The inner container 4 is particularly embodied as a bag. Preferably, it is a folded container or bag that is welded closed. However, other constructive solutions are also possible.

[0018] Especially preferably, the wall of the inner container 4 is film-like and/or formed by a composite film. The wall is preferably embodied such that it is diffusion-tight, at least to a large extent. For example, the wall or film can have an aluminum layer, aluminum deposition or the like as well as other layers, particularly consisting of a polyolefin.

[0019] The dispensing device 1 also preferably has an outer container 5 which is indicated merely with a broken line in FIG. 1. The inner container 4 is preferably accommodated together with the valve 3 in the outer container 5. In the depicted example, the valve 3 is provided with a plate 6 or

held by same which, in turn, is connected with the outer container 5 particularly in a gas-tight manner. Especially preferably, the plate 6 forms a tight-sealing lid or closure of the outer container 5.

[0020] The plate 6 is preferably made of metal. In principle, however, it can also be composed of plastic or any other suitable material, particularly a composite material.

[0021] The valve 3 has a valve housing 3a which is connected with the plate 6 or held by same. In the depicted example, the plate 6 has a side 6a—here an underside, inner side, flat side or an annular area—facing the inner container 4 or interior of the outer container 5 which is provided with a preferably centered, outwardly protruding recess 6b.

[0022] The valve 3 or valve housing 3a is accommodated or held with one end in the recess 6b, particularly in a clamping, nonpositive or positive manner, for example by injection or spraying, caulking, welding, gluing or the like. The valve 3 or valve housing 3a preferably ends on the outlet side in the recess 6b.

[0023] Preferably, a particularly ring-shaped seal 7 is arranged between the floor of the recess 6b and the front side of the valve housing 3a in order to seal off the outside of the valve housing 5 with respect to the plate 6 and thus seal the outer container 5 in a gas-tight manner. However, other constructive solutions are also possible.

[0024] The inner container 4 is connected in a gas-tight manner with the valve housing 3—particularly on the end region or inlet end facing away from the plate 6. This end region or this inlet end protrudes particularly into the inside of the outer container 5 and particularly into the interior of the internal container 4.

[0025] The inner container 4 contains the preferably cosmetic product 2 to be delivered. To facilitate the removal of the product 2 from the inner container 4, an optional riser tube 8, particularly a hose or the like, can be connected on the inlet side to the valve 3. The riser tube 8 is particularly inserted into a connector on the inlet side formed by the valve housing 3a, or is or can be connected on the inlet side in another suitable manner with the valve housing 3a.

[0026] The outer container 5 is filled with a pressurized gas 9 which is indicated with dots in FIG. 1. The gas 9 is particularly air or another suitable pressurized gas, optionally even liquefied gas or the like.

[0027] The gas pressure in the outer container 5 acts on the outside of the flexible inner container 4 so that, when the valve 3 is open, the product 2 is output via the valve 3 and an optionally adjacent delivery head or the like. When the product 2 is removed or dispensed, the inner container 4 collapses.

[0028] As already mentioned, the inner container 4 is preferably connected in a gas-tight manner, particularly welded, with the valve housing 3a. Especially preferably, the inner container 4 is ultrasonically welded with the valve housing 3a. This enables a substantially more energy-saving, quicker and/or more cost-effective manufacture of the dispensing device 1 compared to the thermal welding provided in the prior art. It is also possible in principle, however, to connect the inner container 4 with the valve housing 3 in another suitable manner, for example through another type of welding, clamping, spraying, gluing or the like.

[0029] In the depicted example, the valve housing 3a has a preferably at least substantially tubular section 3b which particularly forms the inlet-side end and/or a connector for the riser tube 10.

[0030] The valve housing 3a has, particularly on its tubular section 3b, a connecting section 3b which is connected, particularly welded, especially preferably by means of ultrasonic welding, with the inner container 4 in a gas-tight manner.

[0031] In contrast to the prior art, the connecting section 3c is preferably attached or welded onto the outside of the inner container 4.

[0032] The connecting section 3c is preferably at least substantially level. This is to be understood in the narrower sense particularly such that the connecting section 10 forms an at least substantially level contact surface with which the inner container 4 is connected. It should be noted, however, that the connecting section 3c can also merely form a particularly front-side or ring-like contact surface or connection surface for connection with the inner container 4 which extends radially, for example.

[0033] The connecting section 3c is preferably thin and/or flange-like and/or washer-like or ring-like. In particular, it protrudes downward radially from the valve housing 3a or tubular section 3b toward the outside.

[0034] The connecting section 3c is preferably arranged on the inlet-side end of the valve housing 3a or tubular section 3b.

[0035] The connecting section 3c encloses the inlet of the valve 3 or valve housing 3a and/or the riser tube 8, preferably in the manner of a washer.

[0036] In the illustration according to FIG. 1, the inner container 4 is preferably brought in contact with the connecting section 3c from below and connected therewith. The connection surface therefore preferably lies on the side of the connecting section 10 facing away from the valve 3 or plate 6. In this case, the inner container 4 is connected only on the outside with the valve housing 3a or connecting section 3b.

[0037] Alternatively, however, it is also possible to connect the inner container 4 with the other ring-shaped surface—the upper surface in the illustration according to FIG. 1—of the connecting section 3c. In this case, the inner container 4 is connected with an inner side with the connecting section 3c or its connection surface.

[0038] In both cases, the connecting section 3c is connected only with one wall of the inner container 4. In particular, it is not necessary to weld the valve housing 3a into a weld seam between two wall sections of the inner container 4 as is required in the prior art. Accordingly, simple manufacture is made possible and the likelihood of leakage is minimized.

[0039] According to another, likewise independent aspect of the present invention, at least one welding bead 10 is arranged or formed, particularly molded, on the valve housing 3a prior to welding with the inner container 4. The welding bead 10 is covered by the inner container 4 during welding. The welding bead 10 is particularly bar- or rib-like and/or continuous or uninterrupted. In cross section, the welding bead 10 is, for example, substantially triangular, square, rectangular, trapezoidal or convex or arched.

[0040] Especially preferably, the inner container 4 is welded with the valve housing 3a along the welding bead 10, so that a defined, at least substantially linear connection is made possible between the valve housing 3a on the one hand and the inner container 4 on the other hand. In this way, a defined and tight connection between the valve housing 3a and the inner container 4 can be achieved with relatively little ultrasonic energy. However, the welding bead 10 can be used not only during ultrasonic welding but during other types of welding as well.

[0041] The welding bead **10** preferably has a height and/or width of at least 0.2 mm and/or at most 0.8 mm, especially preferably of less than 0.5 mm. Very especially preferably, the height and/or width is effectively 0.3 mm.

[0042] Especially preferably, the welding bead **10** ends in an edge or tip which is at least substantially rectangular. In cross section, the welding bead **10** is particularly substantially triangular or trapezoidal or provided toward the free end with an at least substantially triangular or trapezoidal tip.

[0043] Especially preferably, the welding bead **10** extends at least substantially around a periphery of the valve housing **3a** or a surface of the valve housing **3a** to be connected with the inner container **4**.

[0044] Especially preferably, the welding bead **10** forms a closed loop. However, it can also be merely a finite bar, rib or the like which does not form a closed loop.

[0045] Instead of the continuous welding bead **10**, several sections which overlap each other, for example, and/or are spaced very close together can also be provided.

[0046] Especially preferably, at least two welding beads **10** are provided which are spaced apart or run parallel to each other. In this way, a kind of “double seal” or two-fold linear connection can be achieved between the valve housing **3a** on the one hand and the inner container **4** on the other hand.

[0047] During the welding of the inner container **4** with the valve housing **3a**, a fusing of the welding bead **10** or welding beads **10** occurs and, accordingly, a flattening and connection occurs with the inner container **4**.

[0048] The welding beads **10** are shown in FIG. 1 only for the sake of clarity. The welding beads **10** are in fact at least substantially no longer present or visible when the inner container **4** is welded on.

[0049] Especially preferably, the valve housing **3a** and at least the inner and/or outer layer of the inner container **4**—particularly the layer of the inner container to be welded with the valve housing **3a**—are made of the same material. This facilitates the connection, particularly welding. However, this is not absolutely necessary. It is also possible for different materials to be used which can be connected to one another, particularly through welding or in another suitable manner, as already described.

[0050] If the inner container **4** is made of a single-layer material, this material also forms the inner layer. The term “inner layer” is therefore to be understood such that it includes a single-layer construction.

[0051] In the depicted example, the valve housing **3a** and/or the inner layer of the inner container **4** is preferably composed of polyethylene. This material has a substantially higher level of diffusion-tightness compared to the polypropylene used in the prior art. Moreover, this material can also be welded by ultrasound.

[0052] Alternatively, polyamide in particular can also be used for the valve housing **3a** and/or the inner layer of the inner container **4**. This results particularly in advantages commensurate with those obtained during the use of polyethylene.

[0053] It should be noted that the valve housing **3a** need not be composed in its entirety of the named material. Rather, according to a modified embodiment not shown, regions of the valve housing **3a** can also be made of another material. For example, according to a modified embodiment not shown, it is possible to manufacture the valve housing **3a**, in the region in which it is not connected with the inner container **4** or covered by same, from another material and/or to provide

it with a covering made of another material, with the other material particularly having a higher level of diffusion-tightness or other advantageous characteristics. For example, it is possible to spray a diffusion-tight covering into these other regions, especially preferably by means of so-called “bi-injection,” which is to say injection of the other material in the same injection mold against a first material.

[0054] Individual features and constructive solutions of the described embodiments can also be combined with each other as desired and/or used in other dispensing devices.

LIST OF REFERENCE SYMBOLS

[0055]	1	dispensing device
[0056]	2	product
[0057]	3	valve
[0058]	3a	valve housing
[0059]	3b	tubular section
[0060]	3c	connecting section
[0061]	4	inner container
[0062]	5	outer container
[0063]	6	plate
[0064]	6a	side (underside plate)
[0065]	6b	recess
[0066]	7	seal
[0067]	8	riser tube
[0068]	9	gas
[0069]	10	welding bead

1. Dispensing device for dispensing a cosmetic product, with a valve which has a valve housing, and with a flexible inner container which is welded or connected with the valve housing,

wherein

the valve housing has an at least substantially level and/or thin and/or flange-like and/or plate-like connecting section with which the inner container is exclusively welded or connected, and wherein

the valve housing is welded or connected only with one outer side of the inner container.

2. Dispensing device as set forth in claim 1, wherein the connecting section extends substantially transversely to the longitudinal extension of the valve housing or of an outer container of the dispensing device or of a main delivery direction of the valve.

3. Dispensing device as set forth in claim 1, wherein the valve housing has a tubular section to which the connecting section is adjacent.

4. Dispensing device as set forth in claim 1, wherein the connecting section encloses an inlet or a riser tube of the dispensing device in the manner of a washer and/or protrudes radially downward from the valve housing over the full periphery.

5. Dispensing device for dispensing a cosmetic product, with a valve which has a valve housing, and with a flexible inner container which is welded with the valve housing,

wherein

the inner container is ultrasonically welded with the valve housing.

6. Dispensing device for dispensing a cosmetic product, with a valve which has a valve housing, and with a flexible inner container which is welded with the valve housing,

wherein

at least one welding bead is arranged or formed on the valve housing prior to welding with the inner container which is covered by the inner container during welding.

7. Dispensing device as set forth in claim 6, wherein the welding bead extends at least substantially around a periphery of the valve housing or is molded on the valve housing.

8. Dispensing device as set forth in claim 6, wherein two welding beads (10) are provided which are spaced apart and/or run parallel to each other.

9. Dispensing device as set forth in claim 1, wherein at least one of the valve housing or an inner layer of the inner container is composed of polyethylene.

10. Dispensing device as set forth in claim 1, wherein the valve housing or an inner layer of the inner container is composed of polyamide.

11. Dispensing device as set forth in claim 1, wherein the inner container is embodied as a bag.

12. Dispensing device as set forth in claim 1, wherein the inner container collapses upon removal of the product.

13. Dispensing device as set forth in claim 1, wherein the dispensing device has an outer container with which the valve housing is connected in a gas-tight manner or is integrated into the valve.

14. Dispensing device as set forth in claim 1, wherein the inner container is arranged in the outer container and is under external pressure or gas pressure.

15. (canceled)

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