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(54) **Actuating assembly comprising an enveloping member, an enveloping member and an aerosol can comprising such an actuating assembly**

(57) Actuating assembly, intended in particular for an aerosol can, at least comprising a tilting valve, which valve comprises an annular sealing element (6) and a dispensing bush, cooperating with the said sealing element, the dispensing bush (7) defining a dispensing channel and cooperating with a removable channel shaped enveloping member (6), wherein the outside of the enveloping member at least partially covers the inner wall of the dispensing channel. By the presence of the enveloping member, the inner wall of the dispensing channel will essentially not be contacted by the material to be dispensed. The enveloping member can be easily removed from the assembly and cleaned or replaced. The assembly does not need any further cleaning.

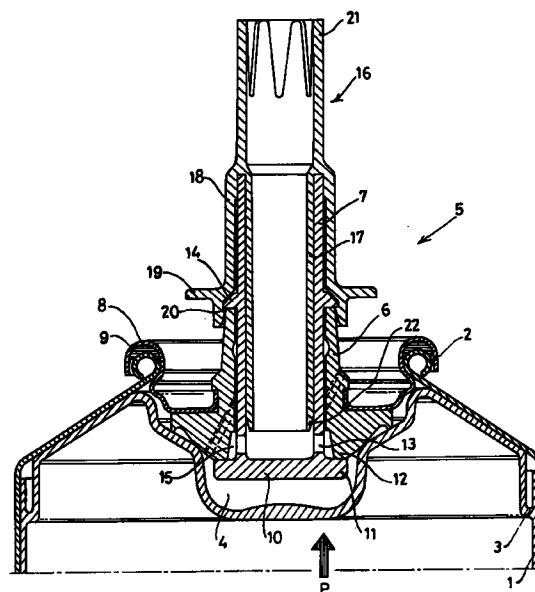


FIG. 1.

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Description

The present invention firstly relates to an actuating assembly for dispensing material from a pressurized or pressurizable container, at least comprising a tilting valve, which valve comprises an annular sealing component connectable with the container, and a dispensing bush sealingly cooperating with said sealing component, which dispensing bush comprises an open end downstream in the intended discharge direction and a bottom upstream in the intended discharge direction and in the side wall in the proximity of the said bottom one or more feed openings, which dispensing bush defines a dispensing channel, the actuating assembly comprising a removable channel-shaped enveloping member, cooperating with the dispensing bush, which enveloping member comprises a passage and a discharge opening, such that the sealing between the dispensing bush and the sealing component can be opened by tilting the dispensing bush.

An actuating assembly of this kind is generally known and is not only employed in aerosol cans but for all kinds of devices which are used to dispense material. Devices of this kind may range from paint aerosol cans and lubricant guns to whipped cream squirts and aerosol cans for cheese spread.

Such an actuating assembly is known from GB-A-2 096 245. The enveloping member of said device is slipped around the outer wall of the dispensing bush. A spherical end portion of said enveloping member contains a discharge slit, that opens on discharging material.

However, a significant drawback of this device is that, after the device has been used to dispense material, the dispensing channel and the dispensing opening in the dispensing bush are soiled and are difficult or impossible to clean. Particularly in the case of foodstuffs which are susceptible to decay or materials which dry out or harden in some other manner, this is a considerable problem.

The object of the present invention is to eliminate the abovementioned drawbacks and to this end the actuating assembly according to the invention is characterized in that the outside of the enveloping member at least partially covers the inner wall of the dispensing channel in the dispensing bush.

In this application, a dispensing opening reflects to an opening at the downstream end of the dispensing bush, whereas a discharge opening reflects to an opening at the downstream end of the enveloping member.

The actuating assembly according to the invention makes it possible, after having used the actuating assembly, to remove the enveloping member and clean the latter or replace it with a new enveloping member. As a result, soiling of the dispensing channel and the dispensing opening, with all the attendant drawbacks, is prevented.

The actuating assembly according to the invention

is particularly suitable for dispensing sticky or pasty materials or other materials which soil the dispensing channel and which are difficult to remove.

There are no particular limitations to the shape of the enveloping member nor to the material from which it is produced. It will be clear that special materials and shapes can be used for special applications. The enveloping member may also be designed such that when it is removed the wall of the dispensing channel is scraped clean.

Advantageously, the enveloping member extends as far as the dispensing opening in the dispensing channel. The larger the part of the inner wall of the dispensing channel and the dispensing opening covered by the enveloping member, the better the action thereof. It will be clear that it is most preferable for the shape of the outside of the enveloping member to be matched to the shape of the inside of the dispensing channel.

In this respect, the enveloping member can extend from the dispensing opening to just above the feed openings of the dispensing bush.

Preferably, the enveloping member covers the inner wall of the dispensing channel essentially completely.

In particular, the enveloping member is substantially tubular and is provided at one end with a collar, which extends radially and bears against the outside of the dispensing bush around the dispensing opening. The presence of the collar simplifies placing the enveloping member into the dispensing channel of the dispensing bush, since the said enveloping member can be inserted until the collar bears against the dispensing device around the dispensing opening.

In a particular embodiment, the enveloping member comprises an outer sleeve, which is connected to the open end of the dispensing bush and at least partially encloses the dispensing bush. This provides very accurate positioning of the enveloping member with respect to the actuating assembly.

In this way, the enveloping member is likewise readily accessible from outside, which is advantageous for ease of removal thereof.

In particular, the enveloping member and the dispensing bush comprise means for releasibly coupling the enveloping member to the dispensing bush. This is advantageous in order to prevent the enveloping member from being forced out of the dispensing channel during the dispensing of material. Means of this kind may be designed, for example, in the form of a friction coupling, interacting projections, collars and/or grooves, a snap-in connection, a screw-thread connection or bayonet connection, etc.

Preferably, the enveloping member, at the end directed away from the discharge opening, comprises a bottom and, at the level of the feed openings of the dispensing bush, it comprises one or more passage openings. In this embodiment, substantially the entire inner surface of the dispensing channel of the dispensing

bush is covered by the enveloping member and protected against soiling.

Particularly preferably, the bottom is convex in the direction of the discharge opening. When the enveloping member is removed, a small amount of material may remain in the dispensing channel. A chamber, which after the insertion of the enveloping member for a following operation can receive the said residues, is formed between the convex bottom of the enveloping member and the bottom of the dispensing bush.

Advantageously, in this case, the transition between the bottom and the remainder of the enveloping member is bevelled towards the inner wall of the dispensing bush. A sharp edge is thus obtained, which edge keeps the inner wall of the dispensing channel of the dispensing bush clean. This wall is scraped clean by the sharp edge during the insertion of the enveloping member.

Particularly advantageously, the bottom comprises at least one aperture. This opening serves to allow any material which has been forced downwards by the enveloping bush and would otherwise accumulate between the bottom thereof and the bottom of the dispensing bush into the enveloping member and in this manner to be able to dispense the said material again. This aperture is advantageously present at the highest point of the convex bottom of the enveloping member.

The invention further provides an enveloping member, obviously intended for an actuating assembly according to the invention.

Particularly advantageously, the enveloping member according to the invention comprises a shaping nozzle. A shaping nozzle is a nozzle which is used, for example on whipped cream squirts or other decorating devices, in order to impart a specific decorative shape to the strand of material to be dispensed.

Furthermore, the invention provides an aerosol can intended to dispense material, in particular pasty material, at least comprising a material container and an actuating assembly, which aerosol can is characterized in that the actuating assembly is an actuating assembly according to the invention.

The container can comprise a freely movable piston, which is under gas pressure and serves to expel the material to be dispensed. It is also possible, that the container comprises a propellant, which is in direct contact with, or partially or completely dissolved in the material to be dispensed. Further embodiments of such a container are known to the persons skilled in the art.

The actuating assembly used, comprising the sealing component and the dispensing bush, is an actuating assembly which acts by tilting the dispensing bush. If the dispensing bush is tilted with respect to the sealing component, the seal between the sealing component and one or more feed openings of the dispensing bush is eliminated and material can be dispensed.

In case the actuating assembly is part of an aerosol can with a free piston, said free piston can force material through the feed openings of the dispensing bush.

Aerosol cans for whipped cream, for example, are known, it being possible to remove the spray nozzle from the aerosol can in order to be able to clean it. In practice, however, this solution is unsatisfactory, since the parts to be cleaned are often difficult to gain access to and it is undesirable to remove the entire spray nozzle. This is because there is a risk of the user mounting the spray nozzle incorrectly after cleaning, leading to whipped cream being dispensed in an uncontrolled manner.

Further reference is made to EP-A-0 150 679, which describes a spray head, comprising a tilting valve and a removable mouth piece, for rechargeable whipped cream aerosols. The tilting valve does not comprise a dispensing bush, but is actuated by a separate knob, situated at the side of the spray head. If the mouth piece is removed, the aerosol can can be filled with propellant through said tilting valve.

US-A-2,766,914 describes a tilting valve, in which an enveloping member, comprising a passage opening is accommodated in a flexible sealing element. By tilting the insert, the opening is no longer closed by the sealing element, so that material can be dispensed. Said insert is however not removable without discharging the complete contents of the container.

The invention will be explained in more detail below with reference to the appended drawing, in which:

Figure 1 shows a diagrammatic cross-section of an aerosol can for cheese spread, having a dispensing device according to the invention; and

Figure 2 shows two embodiments of an insert according to the invention, having a bottom.

In Figure 1, 1 denotes a container which is provided with a beaded edge 2. An annular piston 3, which is under a pressure P owing to a propellant gas present beneath the said piston in the container 1, is present in the container. The piston 3 has a shape such that there is virtually no dead space present when the container 1 is completely emptied. In the embodiment shown in Figure 1, the aerosol can has just been emptied and a small amount of cheese 4 remains.

An actuating assembly, which is indicated generally by reference number 5, comprises a sealing component 6 and a dispensing bush 7 accommodated therein. The sealing component 6 is fastened to the aerosol container 1 by means of a clamping ring 8, which interacts with the beaded edge 2 with the interposition of a sealing ring 9.

The dispensing bush 7 comprises a bottom 10 with a radially protruding flange rim 11, which at 12 bears against the sealing component 6. Furthermore, a plurality of feed openings 13 are present in the wall of the dispensing bush 7. A circumferential collar 14 interacts on the other side with the sealing component 6. The said component 6 is thus clamped between the rim 11 and the collar 14 of the dispensing bush 7.

16 Denotes an enveloping member, which comprises a part 17 which extends in the dispensing bush 7 and a sleeve 18 which is situated on the outside, the dispensing bush 7 being accommodated between the outer sleeve 18 and the inner part 17. Furthermore, the enveloping member 16 comprises an actuating collar 19, on which a finger is placed when using the aerosol can. Furthermore, an inwardly directed collar 20 is present, which interacts in a snap-in manner with the collar 14 of the dispensing bush, in order to position the enveloping member 16 in a suitable manner with respect to the actuating assembly.

21 Denotes a shaping nozzle which serves to impart a specific decorative shape to the material dispensed.

A bottom edge 22 of the enveloping member extends as far as just above the feed openings 13 of the dispensing nozzle 7. This bottom edge 22 is of slightly tapered design, in order to simplify insertion of the enveloping member 16.

By tilting the dispensing bush 7, one or more feed openings 13 can be placed in communication, via an annular chamber 15 between the dispensing bush 7 and the sealing component 6, with the inside of the aerosol can container 1, at which moment cheese can be dispensed through the dispensing bush 7 wherein the enveloping member 16 is present.

It is noted, that the dimensions of the actuating assembly can be adapted according to the specific material to be dispensed. In case of a highly viscous material, e.g. cheese spread, the dimensions of the dispensing channel and therefore of the actuating assembly are advantageously to be selected as large as possible. In this respect, the largest possible size of the assembly is dictated by the free space between the sealing component 6 and that part of the clamping ring 8, which is in contact with the beaded edge 2. Said free space should at least enable proper tilting of the device. Clamping ring 8 can be designed accordingly.

Figures 2a and b show two preferred embodiments of an enveloping member 16 having a bottom. In Figure 2a, a flat bottom is present with passage openings 23 in the side wall of the enveloping member 16. This enveloping member 16 covers substantially the entire inner wall of the dispensing bush 7. The number and position of the passage openings 23 can be selected such that at least one of the passage openings 23 is always in communication with an opening 13.

In the embodiment of the enveloping member 16 in accordance with Fig. 2b, a convex bottom 24 having a central aperture 25 is shown. The edge 26 is designed to be sharp, in order to scrape clean the inner wall of the dispensing bush 7 when the enveloping member 16 is inserted into the latter. If material is removed in that process, this will accumulate between the bottom 24 and the bottom of the dispensing bush and this material can be pressed into the interior of the enveloping member 16 through the aperture 25. In the event of a follow-

ing dispensing action, this material can leave the dispensing device together with fresh material.

Claims

1. Actuating assembly (5) for dispensing material (4) from a pressurized or pressurizable container (1), at least comprising a tilting valve, which valve comprises an annular sealing component (6) connectable with the container (1), and a dispensing bush (7), sealingly cooperating with said sealing component, which dispensing bush (7) comprises an open end downstream in the intended discharge direction and a bottom (10) upstream in the intended discharge direction and in the side wall in the proximity of the said bottom (10) one or more feed openings (13), which dispensing bush (7) further defines a dispensing channel, the actuating assembly (5) comprising a removable channel-shaped enveloping member (16), cooperating with the dispensing bush (7), which enveloping member (16) comprises a passage and a discharge opening, all in such a way that the sealing between the dispensing bush (7) and the sealing component (6) can be opened by tilting the dispensing bush (7), **characterized** in that the enveloping member (16) at least partially covers the inner wall of the dispensing channel in the dispensing bush (7).
2. Actuating assembly according to claim 1, **characterized** in that the enveloping member (16) substantially completely covers the inner wall of the dispensing channel.
3. Actuating assembly according to one or more of the preceding claims, **characterized** in that the enveloping member (16) comprises an outer sleeve (18), cooperating with the open end of the dispensing bush (7) and at least partially enclosing the dispensing bush (7).
4. Actuating assembly according to one or more of the preceding claims, **characterized** in that the enveloping member (16), at the end directed away from the discharge opening comprises a bottom (24) and, at a level of the feed openings (13) of the dispensing bush (7), comprises one or more passage openings (23).
5. Actuating assembly according to claim 4, **characterized** in that the bottom (24) of the enveloping member (16) is convex in the direction of the discharge opening.
6. Actuating assembly according to claim 4 or 5, **characterized** in that the transition (26) between the bottom (24) and the remainder of the enveloping member (16) is bevelled towards the inner wall of

the dispensing bush (7).

7. Actuating assembly according to one or more of claims 4-6, **characterized** in that the bottom (24) comprises at least one aperture (25). 5
8. Enveloping member, obviously intended for an actuating assembly according to one or more of claims 1-7. 10
9. Enveloping member according to claim 8, **characterized** in that it comprises a shaping nozzle (21).
10. Aerosol can, intended to dispense material, in particular pasty material, at least comprising a material container and an actuating assembly, **characterized** in that the actuating assembly is an actuating assembly according to one or more of claims 1-7. 15

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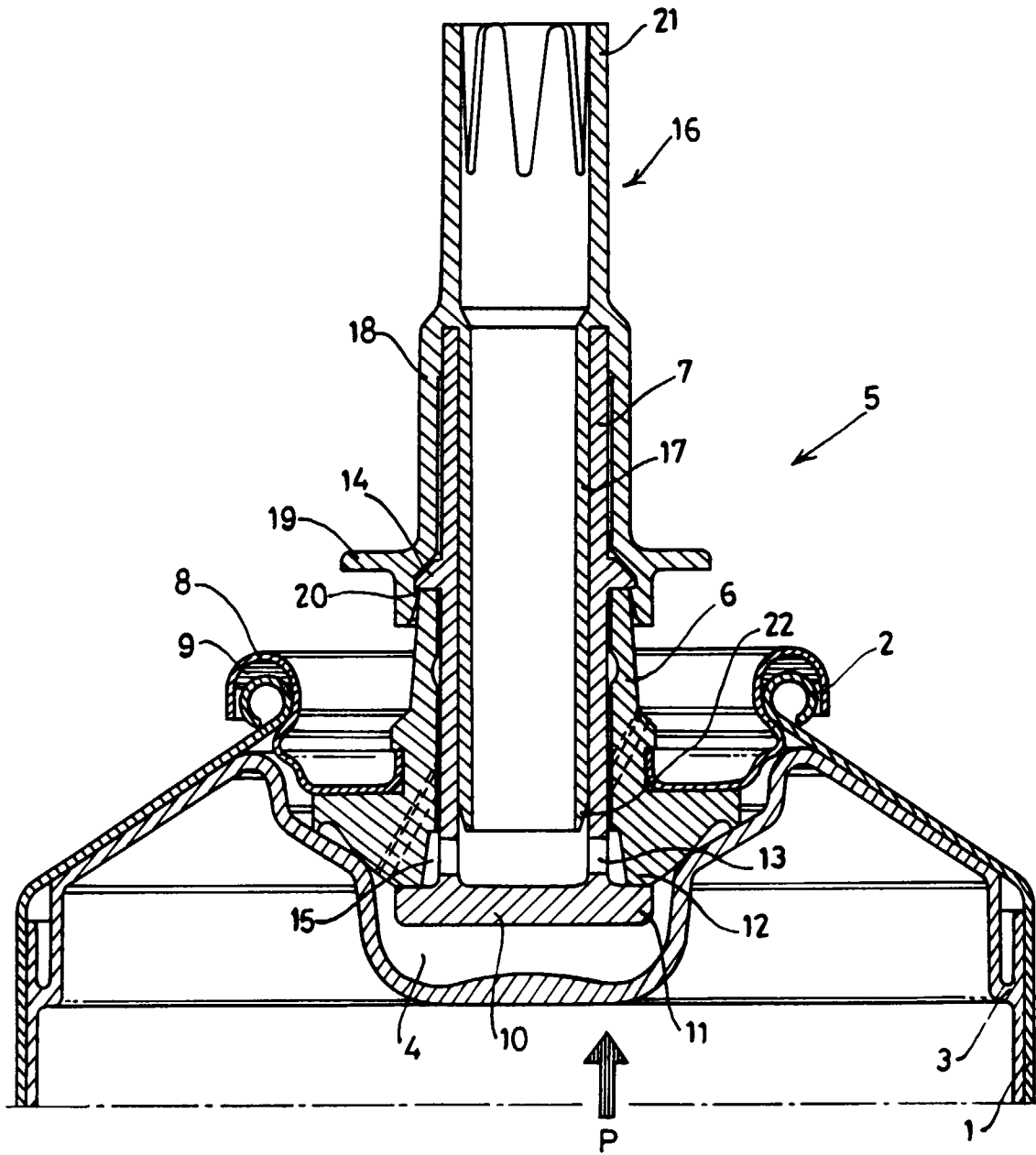


FIG. 1.

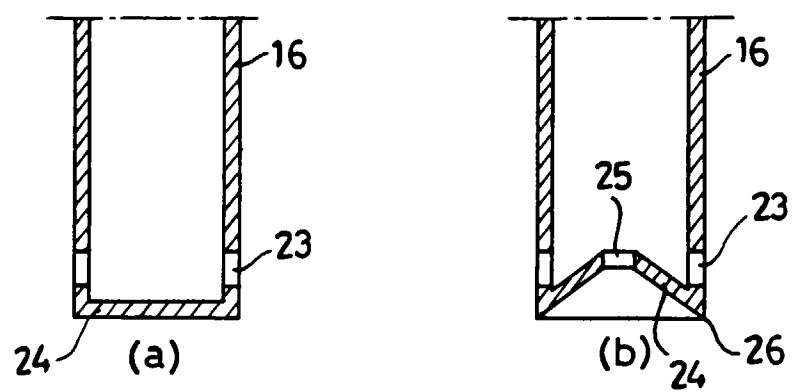


FIG. 2.



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EUROPEAN SEARCH REPORT

Application Number
EP 97 20 2019

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.6)
D,A	EP 0 150 679 A (BRÜNGGER) 7 August 1985 * page 2, line 1 - line 31; figure 1 *	1-10	B65D83/46 B65D83/28
A	GB 2 096 245 A (GEIER) 13 October 1982 * page 1, line 81 - page 2, line 4; figures 1-3 *	1	
D,A	US 2 766 914 A (BAER) 16 October 1956 * column 2, line 13 - line 69; figures 1-3 *	1,2,4,10	
A	EP 0 102 797 A (WESTON) 14 March 1984 * page 3, line 19 - page 6, line 23; figures 1-4 *	1,3,10	
A	US 2 615 597 A (TOMASEK) 28 October 1952 * column 1, line 51 - column 2, line 33; figures 1-5 *	1,8-10	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B65D
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		9 October 1997	Vantomme, M
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