

EP 0551146

The invention relates to a spray head for a spray container for dispensing foam, wherein the spray container has a manually actuatable dispensing valve in a discharge passage of the spray head and downstream of the dispensing valve the spray head has a closure element which closes the discharge passage automatically and with a delay relative to the dispensing valve and the closure element is of an approximately mushroom-like shape, is inserted with its stem axially into the discharge passage and in the closure position bears with the edge of its mushroom head against the edge of the discharge opening of the discharge passage and with a radial projection of the stem against an undercut configuration in the discharge passage, engaging under said undercut configuration.

With a known spray head of this kind (US-A 44 37 592) the closure element is opened upstream of the dispensing valve and is closed tightly downstream thereof. However, when foam is dispensed from an aerosol- or spray container (spray can) it is within one's interest that when the dispensing valve is opened the aerosol product which is initially contained in the spray container in liquid form is not discharged from the spray head in unretarded manner, but foams up completely in the first instance. When the closure element opens upstream of the dispensing valve, however, the aerosol liquid is able to be at least partially dispensed before it foams up completely. It is also in one's interest not to let the foam be dispensed in unretarded manner because it has been seen that foam which is dispensed in retarded manner is firmer in consistency. If, on the other hand, the closure element closes tightly, the residues of product remaining between the dispensing valve and the discharge opening can form foam subsequently in the closed discharge passage, and, subjected to the pressure of the foam, the closure element may open again so that more foam is discharged.

The aim of the invention is to disclose a spray head of the kind in question, wherein the foam being discharged is firmer in consistency, and wherein foam is prevented from being discharged after the closure element has closed.

According to the invention, this problem is solved in that opening of the closure element is delayed relative to opening of the dispensing valve and in

its closed position the closure element allows gases but no liquids to escape, and that at least the mushroom head comprises elastically flexible material.

With this solution, the closure element which opens with a delay initially acts like a foam dispensing braking means so that the consistency of the foam increases in terms of firmness. Due to the non-hermetic closure and the fact that further gas is able to escape, subsequent foaming and discharge of foam is simultaneously prevented. The edge of the mushroom head bends under the pressure of the foam when the dispensing valve opens, with a delay, away from the edge of the discharge opening of the discharge passage, in order to allow foam to be dispensed. After the dispensing valve closes, the edge of the mushroom head moves back into its closure position by virtue of its inherent elasticity, again with a delay as the foam loses pressure.

The discharge passage can be subdivided into a first portion and a second portion which can be fitted together with the first portion and which has the closure element. Therein, the first portion can form the conventional discharge passage into which the second portion can be inserted easily in the desired configuration.

There will now follow a more detailed description of the invention and further developments thereof with the aid of the drawings, wherein:

Figure 1: is an axial section through a spray head in the closure position which does not represent any of the embodiments claimed, but which serves to describe the mode of operation and design of the embodiment according to the invention according to Figures 3 and 4,

Figure 2 shows the spray head according to Figure 1 in the open position,

Figure 3 is an explosive view of an axial section through a top of an embodiment of a spray head according to the invention, with an associated closure element,

Figure 4 shows the top according to Figure 3 with the closure element inserted therein in the closure position.

The spray head according to Figures 1 and 2 consists of an actuating top 1 for a dispensing valve (not shown) of a spray container for dispensing foam with a closure top 2 of approximately mushroom head shaped cross-section, into which closure top a mushroom head shaped closure element 3 is inserted with a snap fit, and a protective hood 4.

The actuating top 1 has a vertical discharge tube 5 which forms a first portion of a discharge passage 6 and into which a piece of tube 7 of the closure top 2 is inserted, wherein the piece of tube 7 forms a second portion of the discharge passage 6. Therein, the dispensing tube 5 and the piece of tube 7 are held close together with frictional engagement. The axially bottom portion of the discharge tube 5 forms a seating 8 for receiving the dispensing end of the dispensing pipe of the dispensing valve. The discharge passage 6 is partly blocked by a deflector wall 9 extending transversely therein, against which deflector wall the aqueous aerosol liquid which is released from the spray container can foam up first of all.

The upper wall 10 of the actuating top 1 is simply joined in one piece at the one side (the left-hand side in Figure 1) of the dispensing tube 5 to the upper edge of a radially outer peripheral wall 11 of the actuating top 1 which can be placed onto the upper edge of the spray container with a snap fit. The wall 10 consists of a flexible material. Therefore, by depressing an actuating step 12 which is diametrically oppositely disposed to the connection location between the walls 10 and 11 a pressure can be applied to the dispensing tube of the dispensing valve which engages into the seating 8. The dispensing valve is opened by depressing the dispensing tube which simultaneously forms a closure part of the dispensing valve.

The closure element 3 is of an approximately mushroom-shaped configuration, and its stem 13 is guided axially into the discharge passage 6. The stem 13 has a radial projection 14 in the form of a peripheral bead which engages underneath an undercut configuration 15 which is likewise formed by a radially inwardly projecting bead in the discharge passage 6. In the closure position of the closure element 3, shown in Figure 1, the edge 16 of the mushroom head 17 of this closure element rests on the edge 18 of the discharge opening of the discharge passage 6. In the closure position, the radial projection 14 is disposed at an axial spacing d away from the undercut configuration 15,

which spacing defines and delimits the stroke movement of the closure element 3 of rigid material. Axial through passages 19 pass through the radial projection 14 as far as the upper side of the projection forming the undercut configuration 15. The mushroom head 17 of the closure element 3 is lowered, so that it is flush as far as possible, into an axial recess 20 in the mushroom head like portion of increased width of the closure top 2.

When the actuating step 12 is depressed and the dispensing valve is opened, the contents of the container flow, subjected to the pressure of a propellant, via the dispensing valve and its dispensing tube against the deflector wall 9 which deflects it, causing foaming, into the dispensing tube 5 and the piece of tube 7. There, it impinges on the closure element 3 which adopts the closure position of Figure 1, wherein this closure element is raised counter to its force of gravity (or its weight) into the open position of Figure 2, with a delay, by the pressure of the foam, and acts like a braking means for discharge of the foam. The consistency of the foam is increased in terms of its firmness by this "retarded" discharge of the foam.

As soon as pressure is removed from the actuating button 12, the dispensing valve closes, whilst the closure element 3 continues to retain the open position under the pressure of the foam.

When the spray container is in an upright position with the discharge passage 6 correspondingly in a vertical position, the closure element 3 is lowered again into the closure position as the foam pressure subsides. Alternatively, the closure element 3 can also be pushed back into the closure position by stripping off the issuing foam. In the closure position, gas can also issue through the closure gap which is not hermetically sealed between the closure element 3 and the closure top 2, whilst the foam or liquid forming in the discharge passage 6 is retained, and residues of product remaining in the discharge passage are simultaneously prevented from being able to undergo change due to the intake of air.

Figures 3 and 4 show a different closure top 2a which can be used with the actuating top 1 and wherein the closure element 3a which is also mushroom head shaped is made of an elastically flexible material rather than a rigid material. The through passages 19a are not formed in the stem 13a, but in a

conically widening part of the piece of tube 7a. Accordingly, the radial projection 14a of the stem 13a is formed continuously in the peripheral extent, and the undercut configuration 15a is interrupted in the peripheral extent by the through passages 19a. The projection 14a is not disposed at an axial spacing away from the undercut configuration 15a, but rests constantly against it.

When the dispensing valve is opened, the closure element 3a is not raised with it, but its edge 16 alone is bent axially upwardly by the pressure of the foam, and, in this way, the closure element 3a is brought with a delay into the open position (not shown). After the dispensing valve has closed, the opening edge 16 is again bent back until it rests on the edge 18 by virtue of its return spring force, and is brought into the closure position. Therefore opening and closing of the closure element 3a is delayed in relation to the opening and closing of the dispensing valve.

Instead of the closure elements shown which are circular in the plan view, it is also possible to have polygonal closure elements, e.g. quadrangular closure elements, and correspondingly adapted shapes of actuating tops with the rest of the design remaining the same, as shown.



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CLAIMS

1. A spray head for a spray container for dispensing foam, wherein the spray container has a manually actuatable dispensing valve in a discharge passage (6) of the spray head and downstream of the dispensing valve the spray head has a closure element (3a) which closes the discharge passage (6) automatically and with a delay relative to the dispensing valve and the closure element (3a) is of an approximately mushroom-like shape, is inserted with its stem (13a) axially into the discharge passage (6) and in the closure position bears with the edge (16) of its mushroom head (17) against the edge (18) of the discharge opening of the discharge passage (6) and with a radial projection (14a) of the stem (13a) against an undercut configuration (15a) in the discharge passage (6), engaging under said undercut configuration, characterised in that opening of the closure element (3a) is delayed relative to opening of the dispensing valve and in its closed position the closure element (3a) allows gases but no liquids to escape, and that at least the mushroom head (17) comprises elastically flexible material.

2. A spray head according to claim 1 characterised in that the discharge passage (6) is subdivided into a first portion (5) and a second portion (7a) which can be fitted together with the first portion and which has the closure element (3a).