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(54) AEROSOL DISPENSER

(57) An aerosol dispenser includes a dispensing head (1) adapted to attach to an aerosol container (2). The dispensing head (1) includes an enablement mechanism (8) and a docking mechanism (9) and the container (2) includes an enablement projection (3) and a docking projection (10). The docking mechanism (9) releasably engages the docking projection (10) to attach the dispensing head (1) to the container (2) such that the enablement projection (3) engages the enablement mechanism (8) to place the aerosol dispenser into an operable condition.

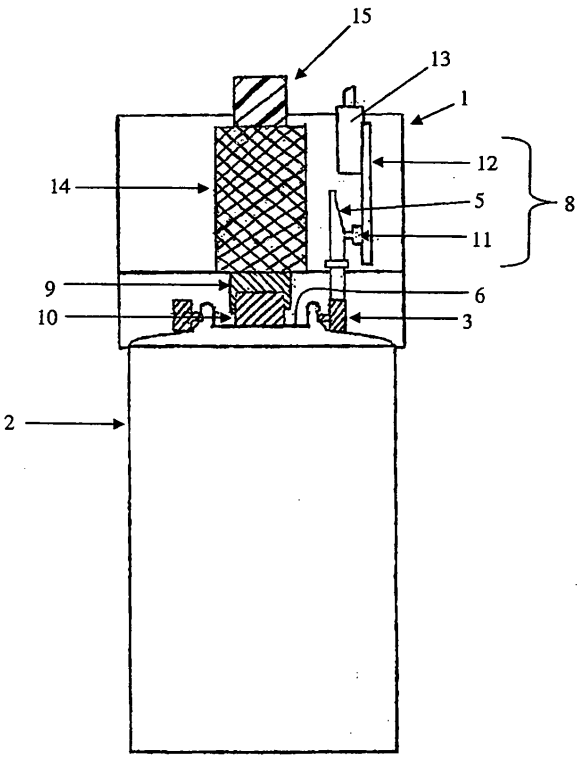

Figure 2

EP 2 380 822 A1

Description

FIELD OF THE INVENTION

[0001] The present invention relates to aerosol dispensers, and more particularly but not exclusively, to aerosol dispensers that are selectively activated to allow automatic aerosol dispensing.

BACKGROUND

[0002] Various forms of aerosol dispensers are known. For example, WO 95/19304 reports an automatic aerosol dispenser for dispensing flowable substances, such as insect repellents, air fresheners, or odor neutralizers that are provided in fluid form. Typically, such dispensers are provided in at least two parts, which are the dispensing head and the refill container that contains the flowable substance.

[0003] Once such aerosol dispensers are activated they intermittently release the flowable substance as bursts of vapor until they are deactivated, run out of power, or run out of flowable material.

[0004] However, once activated the dispensing mechanism will periodically activate regardless of whether or not there is a refill container attached to the dispensing head. This can happen if the activation means (e.g. switch or button) is accidentally depressed. This results in a wearing out of the dispensing mechanism over time and the need to replace the entire unit, as opposed to merely the refillable container.

[0005] It is an object of the present invention to provide an aerosol dispenser that overcomes or at least ameliorates some of the abovementioned disadvantages or which at least provides the public with a useful choice.

[0006] Other objects of the invention may become apparent from the following description which is given by way of example only.

SUMMARY

[0007] In broad terms, one aspect of the invention comprises a dispensing head suitable for association with, or associated with, a pressurized container that is fitted with a collar that places an automatic aerosol dispenser into an operable condition wherein it can be activated.

[0008] In broad terms, one aspect of the invention comprises a pressurized container for attachment to a dispensing head to release pressurized content from the container, the container comprising:

[0009] a dispensing head docking projection that extends from the top surface of the container, through which content is to be, and can be, released under the control of the dispensing head when docked to the container and activated, and

[0010] an enablement projection that extends from the top surface of the container intended and able to operate an enablement mechanism of the dispensing head such that when in an operable condition, or with other controlled input, the content of the container can be dispensed from the container via the dispensing head once activated.

[0011] In one embodiment, the docking projection projects from the top surface of the container and mates with a complimentary opening in a docking mechanism in the dispensing head. Preferably, the complimentary opening in the docking mechanism includes a screw thread. More preferably, the docking projection comprises a valve.

[0012] In one embodiment, the enablement projection at least partially surrounds the docking projection. Preferably, the enablement projection completely surrounds the docking projection. More preferably, the enablement projection surrounds the docking projection in a contoured manner.

[0013] In one embodiment, the enablement projection is formed integrally with a valve cap.

[0014] In one embodiment, the enablement projection is fitted onto the top surface of the pressurized container. Preferably, the enablement projection is fixed into position by the docking projection. More preferably, the enablement projection is fixed onto the top surface of the pressurized container by the docking projection.

[0015] In one embodiment, the enablement mechanism contacts, either directly or indirectly, the enablement projection upon complete docking of the pressurized container with the dispensing head. Preferably, the docking causes displacement of the enablement mechanism, thereby placing the dispensing head in an operable condition. More preferably, the enablement mechanism is a cam and operates, upon displacement, a switch to place the dispensing head in an operable condition.

[0016] In one embodiment, the enablement mechanism switch is connected, either directly or indirectly, to a printed circuit board, wherein displacement of the cam, following docking of the pressurized container, causes the enablement mechanism switch to be displaced laterally to place the dispensing head into an on position. Preferably, the cam is biased downwards. More preferably, a spring causes the cam to be biased downwards.

[0017] In one embodiment, the dispensing head is activated by a switch, button, or lever that is separate from the enablement mechanism. Preferably, the activation of the dispensing head is via a switch.

[0018] In broad terms, one aspect of the invention comprises, as an assembly, combination, or kit, a dispensing head having a docking mechanism and a fluid passageway disposed through the docking mechanism to allow the controlled egress of a flowable substance. A pressurized container is docked into the docking mechanism or able to be docked into the docking mechanism to, when activated, release the flowable substance from the container. The dispensing head and container have interacting features set out from the docking projection of the container to interact with the dispensing head to provide

either direct enablement of dispensing, or with other controlled input into the dispensing head, the release from the dispensing head of the flowable substance from the container.

[0019] In one embodiment, the docking projection of the container docks with the dispensing head in a complimentary interaction. Preferably, the pressurized container docking projection and the dispensing head docking mechanism are docked via a complimentary threaded screw connection.

[0020] In one embodiment, an enablement projection from the top surface of a pressurized container mates with a corresponding feature of the dispensing head. Preferably, the enablement projection surrounds, either partially or fully, the docking projection, and contacts, either directly or indirectly, the enablement mechanism of the dispensing head. More preferably, the enablement projection causes upward displacement of the dispensing head enablement mechanism when the pressurized container is docked with the dispensing head.

[0021] In one embodiment, the docking of the pressurized container with the dispensing head brings into contact the interacting features of the dispensing head and pressurized container to place the assembly in an operable condition.

[0022] In one embodiment, the enablement mechanism is a movable switch. Upon docking of the dispensing head with the pressurized container the switch is displaced upwardly by the enablement projection of the pressurized container. Preferably, the enablement mechanism is biased downwards (preferably by a spring). More preferably, the enablement mechanism comprises a cam and a switch.

[0023] In one embodiment, the enablement mechanism is a cam and an activatable switch. Displacement of the cam owing to docking of the pressurized container with the dispensing head causes the enablement projection to displace the cam upwardly, thereby displacing the switch laterally and placing the assembly in an operable condition. Preferably, the switch comprises a displaceable member connected to a printed circuit board. More preferably, the cam contacts the switch upon upward displacement and causes the switch to be displaced laterally.

[0024] In broad terms, one aspect of the invention comprises a docking feature of a complimentary pressurized container. The docking feature is able to duct fluid released from a docked container under the control of a dispensing head. At least one enablement feature is provided on the pressurized container, which is contoured to surround the docking feature of the container, that is reliant upon an interaction with part of the dispensing head.

[0025] In broad terms, one aspect of the invention comprises a method of introducing a flowable material into the environment from a pressurized container comprising the following steps:

[0026] 1. starting with, or docking together, a dispensing head comprising a docking mechanism, fluid passageway, and enablement mechanism and a pressurized container containing the flowable material and comprising a docking projection and enablement projection;

[0027] 2. the enablement projection contacting, either directly or indirectly, the enablement mechanism upon docking of the dispensing head and the pressurized container to cause displacement of the enablement mechanism in the upwards direction;

[0028] 3. the displacement of the enablement mechanism in the upwards direction activating a switch to place the dispensing head in an operable condition; and

[0029] 4. activating the dispensing head to cause egress of the flowable material out of the dispensing head via the fluid passageway.

[0030] In one embodiment, the enablement mechanism is a cam that activates a switch. Preferably, the cam causes the switch to be displaced laterally. More preferably, the cam directly contacts the enablement projection. In one embodiment, the dispensing head and pressurized container dock together using a screw thread.

[0031] In one embodiment, the upward displacement of the cam causes lateral displacement of the switch, which is connected to a printed circuit board. Displacement of the switch places the dispensing head into an operable condition. In one embodiment, the pressurized container only places the dispensing head in an operable condition when the pressurized container is fully docked with the dispensing head. Preferably, a full docking occurs when the pressurized container is fully screwed into the dispensing head via the docking projection and the docking mechanism.

[0032] In one embodiment, the cam is biased downwards. Preferably, the biasing is mediated by spring action.

[0033] Other aspects of the invention may become apparent from the following description which is given by way of example only and with reference to the accompanying drawings.

[0034] As used herein the term "and/or" means "and," "or," or both.

[0035] As used herein "(s)" following a noun means the plural and/or singular forms of the noun.

[0036] The term "comprising" as used in this specification means "consisting at least in part of". When interpreting statements in this specification which include that term, the features, prefaced by that term in each statement, all need to be present but other features can also be present. Related terms such as "comprise" and "comprised" are to be interpreted in the same manner.

[0037] This invention may also broadly be construed to consist of the parts, elements, and features referred to or indicated in the specification of the application, individually or collectively, and any or all combinations of any two or more of the parts, elements, or features, and where specific integers are mentioned herein which have known equivalents in the art to which this invention relates, such known equivalents are deemed to be incor-

porated herein as if individually set forth.

BRIEF DESCRIPTION OF THE DRAWINGS

[0038] The invention will now be described by way of example only and with reference to the drawings in which:

[0039] Figure 1A is an isometric view of a pressurized container of the prior art;

[0040] Figure 1B is an isometric view of one embodiment of a pressurized container;

[0041] Figure 2 is a schematic diagram, partly in cross-section, of one embodiment of a dispensing head docked to one embodiment of a pressurized container;

[0042] Figure 3 is a schematic diagram, partly in cross-section, of the dispensing head of Figure 2 in a docked relationship with another embodiment of a pressurized container;

[0043] Figure 4 is a schematic diagram, partly in cross-section, of the dispensing head of Figure 2 in a docked relationship with yet another embodiment of a pressurized container;

[0044] Figure 5 is a schematic diagram, partly in cross-section, of another embodiment of a dispensing head in a docked relationship with the pressurized container of Figure 2;

[0045] Figure 6A is a schematic diagram showing the enablement mechanism and enablement projection in an inoperable condition; and

[0046] Figure 6B is a schematic diagram showing the enablement mechanism and enablement projection in an operable condition.

DETAILED DESCRIPTION

[0047] Broadly stated there is described a dispensing head 1 suitable for association with, or associated with, a pressurized container 2, which is fitted with a collar-like enablement projection 3 that places the dispensing head 1 into an operable condition wherein it can be activated.

[0048] Herein described is a pressurized container 2 for attachment to a dispensing head 1 to release pressurized content from the container 2. The container 2 comprises:

[0049] a dispensing head docking projection 10 that extends from the top surface 6 of the container 2 through which content is to be, and can be, released under the control of the dispensing head 1 when docked to the pressurized container 2 and activated; and

[0050] an enablement projection 3 that extends from the top surface 6 of the pressurized container 2 intended, and able, to operate an enablement mechanism 8 of the dispensing head 1 such that when in an operable condition, or with other controlled input, the content of the container 2 can be dispensed from the container 2 via the dispensing head 1 once activated.

[0051] In one embodiment, the docking projection 10 projects from the top surface 6 of the container 2 and mates with a complimentary docking mechanism 9 in the dispensing head 1. Preferably, the complimentary docking mechanism 9 is a screw thread. More preferably the docking mechanism 9 comprises a valve 4.

[0052] In one embodiment, the enablement projection 3 at least partially surrounds the docking projection 10. Preferably, the enablement projection 3 completely surrounds the docking projection 10. More preferably, the enablement projection 3 surrounds the docking projection 10 in a contoured manner.

[0053] In one embodiment, the enablement projection 3 is fitted onto the top surface 6 of the pressurized container 2. Preferably, the enablement projection 3 is fixed into position by the docking projection 10. More preferably, the enablement projection 3 is fixed onto the top surface 6 of the pressurized container 2 by the docking projection 10.

[0054] In one embodiment, the enablement projection 3 is formed integrally with a valve cap 16.

[0055] In one embodiment, the enablement mechanism 8 contacts, either directly or indirectly, the enablement projection 3 upon complete docking of the pressurized container 2 with the dispensing head 1. Preferably, the docking causes displacement of the enablement mechanism 8, thereby placing the dispensing head 1 in an operable condition. More preferably, the enablement mechanism 8 comprises a cam 5 and operates, upon displacement, a switch 11 to place the dispensing head 1 in an operable condition.

[0056] In one embodiment, the enablement mechanism switch 11 is connected, either directly or indirectly, to a printed circuit board 12, wherein displacement of the cam 5, following docking of the pressurized container 2, causes the enablement mechanism switch 11 to be displaced laterally to place the dispensing head 1 into an operable condition. Preferably, the cam 5 is biased downwards. More preferably, a spring (not shown) causes the cam 5 to be biased downwards.

[0057] In one embodiment, the dispensing head 1 is activated by a separate switch, button, or lever 13, or the like, to that of the enablement mechanism 8. Preferably, the activation of the dispensing head 1 is via the switch 13.

[0058] Herein described is an assembly, a combination, or a kit, which includes a dispensing head 1 having a docking mechanism 9 and a fluid passageway disposed therethrough to allow the controlled egress of a flowable substance. A pressurized container 2 is docked into the docking mechanism 9 or able to be docked into the docking mechanism 9 to, when activated, release the flowable substance from the container 2. The dispensing head 1 and container 2 have interacting features set out from the docking projection 10 to interact with the dispensing head 1 to provide either direct enablement of dispensing, or with other controlled input into the dispensing head 1, the release from the dispensing head of the flowable substance from the container 2.

[0059] In one embodiment, the docking projection 10 docks with the dispensing head 1 in a complimentary

interaction. Preferably, the pressurized container dockable projection 10 and the dispensing head docking mechanism 9 dock via a complimentary threaded screw connection.

[0060] In one embodiment, the interacting features comprise an enablement projection 3 that extends from the top surface 6 of the pressurized container 2 and mates with the dispensing head 1. Preferably, the enablement projection 3 partially or fully surrounds the docking projection 10 that contacts, directly or indirectly, the docking mechanism 9 of the dispensing head 1. More preferably, the enablement projection 3 causes upward displacement of the enablement mechanism 8 when the pressurized container 2 is docked with the dispensing head 1.

[0061] In one embodiment, the docking of the pressurized container 2 with the dispensing head 1 brings into contact the interacting features of the dispensing head 1 and pressurized container 2 to place the assembly in an operable condition.

[0062] In one embodiment, the dispensing head enablement mechanism 8 is a movable switch that upon docking of the dispensing head 1 with the pressurized container 2 is displaced upwardly by the enablement projection 3 of the pressurized container 2. Preferably, the enablement mechanism 8 is biased downwards (preferably by a spring). More preferably, the enablement mechanism 8 comprises a cam 5 and a switch 11.

[0063] In one embodiment, the enablement mechanism 8 of the dispensing head 1 is a cam 5 and an activatable switch 11. Displacement of the cam 5 resulting from docking of the pressurized container 2 with the dispensing head 1 causes displacement of the cam 5 by the enablement projection 3 upwardly, thereby displacing the switch 11 laterally and placing the assembly in an operable condition. Preferably, the switch 11 comprises a displaceable member connected to a printed circuit board 12. More preferably, the cam 5 contacts the switch 11 upon upward displacement and causes the switch 11 to be displaced laterally.

[0064] Herein described is a docking projection 10 of a pressurized container 2, such docking projection 10 being able to duct fluid released from such a docked container under the control of a dispensing head 1. The dispensing head 1 includes at least one docking mechanism 9. The pressurized container 2 is reliant upon an interaction with part of the dispensing head 1 by a contoured portion surrounding the dockable feature 10 of the container.

[0065] Herein described is a method of introducing a flowable material into the environment from a pressurized container 2 comprising the following steps:

[0066] 1. starting with, or docking together, a dispensing head 1 comprising a docking mechanism 9, a fluid passageway (not shown), and an enablement mechanism 8, and a pressurized container 2, containing the flowable material, and comprising a docking projection 10 and an enablement projection 3;

[0067] 2. the enablement projection 3 contacting, either directly or indirectly, the enablement mechanism 8 upon docking of the dispensing head 1 and the pressurized container 2 to cause displacement of the enablement mechanism 8 in the upwards direction;

[0068] 3. the displacement of the enablement mechanism 8 in the upwards direction, thereby activating a switch 11 to place the dispensing head 1 in an operable condition; and

[0069] 4. activating the dispensing head 1 to cause egress of the flowable material out of the dispensing head 1 via the fluid passageway.

[0070] In one embodiment, the enablement mechanism 8 comprises a cam 5 that activates a switch 11. Preferably, the cam 5 causes the switch 11 to be displaced laterally. More preferably, the cam 5 directly contacts the enablement projection 3. In one embodiment, the dispensing head 1 and the pressurized container 2 dock together using a screw thread.

[0071] In one embodiment, the upward displacement of the cam 5 causes lateral displacement of the switch 11, which is connected to a printed circuit board 12. The lateral displacement of the switch 11 places the dispensing head 1 in an operable condition.

[0072] In one embodiment, the pressurized container 2 only places the dispensing head 1 in an operable condition when the pressurized container 2 is fully docked with the dispensing head 1. Preferably, full docking occurs when the pressurized container 2 is fully screwed into the dispensing head 1 via the docking projection 10 and the docking mechanism 9.

[0073] In one embodiment, the cam 5 is biased downwards. Preferably, the biasing is mediated by spring action.

[0074] One of the advantages of this invention is that it ensures that pressurized containers 2 that are not fitted with the enablement projection 3 are unable to activate the dispensing head 1. This also ensures that the dispensing head 1 will only operate if the pressurized container 2 has been fitted correctly, that the dispensing head 1 is not inadvertently and uselessly operating without a pressurized container 2 attached, and that only specially formulated pressurized containers 2 with the enablement projection 3 are able to be used in combination with the dispensing head 1 so as to protect the dispensing head 1 from chemical reaction or mechanical damage.

[0075] Figure 2 shows a dispensing head 1 and pressurized container 2 of the present invention. As shown in Figure 1B the pressurized container 2 includes an enablement projection 3 in the form of a collar located on the upper surface 6 of the container 2.

[0076] As shown in Figure 1B the enablement projection 3 can be located about the container valve 4. It should be appreciated that while a collar is depicted, other mechanisms can be used to activate the enablement mechanism 8. For example, a partial surround or upstand, a ramp, or a projection.

[0077] Figure 2 shows a partial cross-sectional view

of the dispensing head 1 fitted and connected to a pressurized container 2 that includes an enablement projection 3. Figure 2 further shows the enablement mechanism 8 for the dispensing head 1.

[0078] The enablement mechanism 8 is depicted in Figures 2-6 as a camming operation. However, it should be appreciated that this is only one embodiment by which the invention can be put into practice. Other enablement mechanisms 8 include the enablement projection 3 activating the switch 11 directly by contacting the switch 11 or by the switch 11 being attached directly to the enablement projection 3.

[0079] As shown in Figures 2-6, the enablement mechanism 8 comprises a cam 5 that is biased in the down position, by, for example, a spring. The cam 5 is displaced upwardly when a pressurized container 2 is attached to the dispensing head 1. One method of attachment is to use a screw thread. Upward displacement of the cam 5 results in lateral displacement of the switch 11. The cam 5 is so designed to displace the switch 11 in and on as it displaces up. When the switch 11 is displaced inwardly it activates the electrical circuit board 12 to electrically power the automatic dispenser solenoid valve 14, which in turn, permits the contents of the container 2 to flow through the spray nozzle 15 into the atmosphere as a spray or mist.

[0080] Figure 3 shows a partial cross-sectional view of a cap 16 that fits onto the top area of a pressurized container 2. The cap 16 has built into its design a simulated enablement projection 3 that activates the enablement mechanism 8 to place the dispensing head 1 into an operable condition.

[0081] Figure 4 shows a partial cross-sectional view of an alternative embodiment of the present invention, wherein the enablement projection 3 is formed integrally with the container 2. The enablement projection 3 will also activate the enablement mechanism 8 and place the dispensing head 1 into an operable condition.

[0082] Figure 5 shows a partial cross-sectional view of an alternative switch mechanism, whereby the cam 5 is displaced upwardly normal to the switch 11 so that the dispensing head 1 is placed into an operable condition.

[0083] Figure 6 is a schematic view demonstrating the effect of the action of the enablement projection 3 on the enablement mechanism 8. In Figure 6A the pressurized container 2 is not fully screwed into the dispensing head 1 and the enablement projection 3 does not activate the switch 11. In Figure 6B the pressurized container 2 is fully screwed into the dispensing head 1 and the enablement projection 3 has been displaced upwardly so that it does now activate the switch 11.

[0084] Each pressurized container 2 has an opening through which the flowable material can pass. In one embodiment, the valve 4 of the pressurized containers 2 is fitted on the outside of this opening and is secured onto the pressurized container 2 by a squeezing process.

[0085] Once activated, the dispensing head 1 can repeat a spray sequence automatically, thereby permitting the continual flow of flowable material from the pressurized container 2 into the dispensing head 1.

[0086] The invention provides the user with a number of benefits, which may be independent of each other, or concurrent, as follows:

[0087] 1. the automatic dispenser will not operate without the container 2 being present. Without this invention, the automatic dispenser could continue to operate without a container 2 connected and provide no benefit to the user. It is therefore using battery energy needlessly and making additional and unnecessary wear on the dispenser mechanism;

[0088] 2. operation of the dispenser also requires the container 2 to be correctly and fully screwed into the dispensing head 1. If a container 2 is not fully screwed into the dispensing head 1 it is possible for the container 2 to be incorrectly fitted and leak the contents of the container 2 into the environment;

[0089] 3. the invention limits the ability to fit non-approved aerosols to the automatic aerosol dispenser. The contents of non-approved aerosol containers may damage or otherwise affect the correct operation and/or performance of the automatic aerosol dispenser; and

[0090] 4. the invention is low cost and is easily fitted to aerosol containers during their filling operation.

[0091] Where in the foregoing description reference has been made to elements or integers having known equivalents, then such equivalents are included as if they were individually set forth.

[0092] Although the invention has been described by way of example and with reference to particular embodiments, it is to be understood that modifications and/or improvements may be made without departing from the scope or spirit of the invention.

INDUSTRIAL APPLICABILITY

[0093] An aerosol dispenser that only operates when an appropriately configured aerosol container is fully installed therein has been presented. The aerosol dispenser remains inoperable lacking an aerosol container, thereby using less energy energy and limiting additional wear on the dispenser mechanism.

[0094] Numerous modifications to the present invention will be apparent to those skilled in the art in view of the foregoing description. Accordingly, this description is to be construed as illustrative only and is presented for the purpose of enabling those skilled in the art to make and use the invention and to teach the best mode of carrying out same. The exclusive right to all modifications within the scope of the impending claims is expressly reserved. All patents, patent publications and applications, and other references cited herein are incorporated by reference herein in their entirety.

Additional embodiments forming part of the present disclosure are set out in the paragraphs that follows:

Paragraph 1. An aerosol dispenser, comprising: a

dispensing head (1) that includes an enablement mechanism (8) and a docking mechanism (9); a container (2) that includes an enablement projection (3) and a docking projection (10); and characterized in that the docking mechanism (9) releasably engages the docking projection (10) to attach the dispensing head (1) to the container (2) such that the enablement projection (3) engages the enablement mechanism (8) to place the aerosol dispenser into an operable condition.

Paragraph 2. The aerosol dispenser of paragraph 1, wherein the enablement mechanism (8) comprises a downwardly biased cam (5), a switch (11), and

control circuitry (12), wherein the cam (5) is displaced upwardly to engage the switch (11) when the dispensing head (1) is attached to the container (2).

Paragraph 3. The aerosol dispenser of paragraph 2, wherein upward displacement of the cam (5) laterally engages the switch (11) to place the aerosol dispenser into the operable condition.

Paragraph 4. The aerosol dispenser of paragraph 2, wherein upward displacement of the cam (5) normally engages the switch (11) to place the aerosol dispenser into the operable condition.

Paragraph 5. The aerosol dispenser of any of paragraphs 1-4, wherein the docking projection (10) comprises a valve (4).

Paragraph 6. The aerosol dispenser of paragraph 5, wherein the dispensing head (1) further comprises a solenoid valve (14) adapted to be in fluid communication with the valve (4) when the dispensing head (1) is attached to the container (2).

Paragraph 7. The aerosol dispenser of paragraph 6, wherein the dispensing head (1) further comprises a manual switch (13) for energizing the solenoid valve (14).

Paragraph 8. The aerosol dispenser of any of paragraphs 1-7, wherein the enablement projection (3) comprises a cap (16) that attaches to the container (2).

Paragraph 9. The aerosol dispenser of any of paragraphs 1-8, wherein the docking projection (10) is at least partially surrounded by the enablement projection (3) and includes screw threads for attachment to corresponding screw threads on the docking mechanism (9).

Paragraph 10. An aerosol dispenser, comprising: a dispensing head (1) that includes an enablement mechanism (8) and a docking mechanism (9), wherein

the enablement mechanism (8) includes a downwardly biased cam (5), a switch (1 1), and control circuitry (12); and characterized in that the docking mechanism (9) is adapted to releasably engage a docking projection (10) on a container (2) to attach the dispensing head (1) to the container (2) such that an enablement projection (3) on the container (2) displaces the cam (5) upwardly.

Paragraph 11. The aerosol dispenser of paragraph 10, wherein upward displacement of the cam (5) engages the switch (11) to place the aerosol dispenser into an operable condition.

Paragraph 12. The aerosol dispenser of paragraph 11, wherein the cam (5) is adapted to disengage from the switch (11) upon removal of a container (2) to place the aerosol dispenser into an inoperable condition.

Paragraph 13. The aerosol dispenser of any of paragraphs 10-12 further including the container (2).

Paragraph 14. The aerosol dispenser of paragraph 13, wherein the docking projection (10) comprises a valve (4) and is at least partially surrounded by the enablement projection (3).

Claims

1. An aerosol dispenser, comprising:

a dispensing head (1) that includes an enablement mechanism (8) and a docking mechanism (9);
a container (2) that includes an enablement projection (3) and a docking projection (10);
wherein the docking mechanism (9) releasably engages the docking projection (10) to attach the dispensing head (1) to the container (2) such that the enablement projection (3) engages the enablement mechanism (8) to place the aerosol dispenser into an operable condition;
characterized in that the enablement projection (3) is collar-like.

2. The aerosol dispenser of claim 1, wherein the enablement mechanism (8) comprises a downwardly biased cam (5), a switch (11), and control circuitry (12), wherein the cam (5) is displaced upwardly to engage the switch (11) when the dispensing head (1) is attached to the container (2).

3. The aerosol dispenser of claim 2, wherein upward

displacement of the cam (5) laterally engages the switch (11) to place the aerosol dispenser into the operable condition.

4. The aerosol dispenser of claim 2, wherein upward displacement of the cam (5) normally engages the switch (11) to place the aerosol dispenser into the operable condition.

5. The aerosol dispenser of any of claims 1-4, wherein the docking projection (10) comprises a valve (4).

6. The aerosol dispenser of claim 5, wherein the dispensing head (1) further comprises a solenoid valve (14) adapted to be in fluid communication with the valve (4) when the dispensing head (1) is attached to the container (2).

7. The aerosol dispenser of claim 6, wherein the dispensing head (1) further comprises a manual switch (13) for energizing the solenoid valve (14).

8. The aerosol dispenser of any of claims 1-7, wherein the docking projection (10) is at least partially surrounded by the enablement projection (3) and includes screw threads for attachment to corresponding screw threads on the docking mechanism (9).

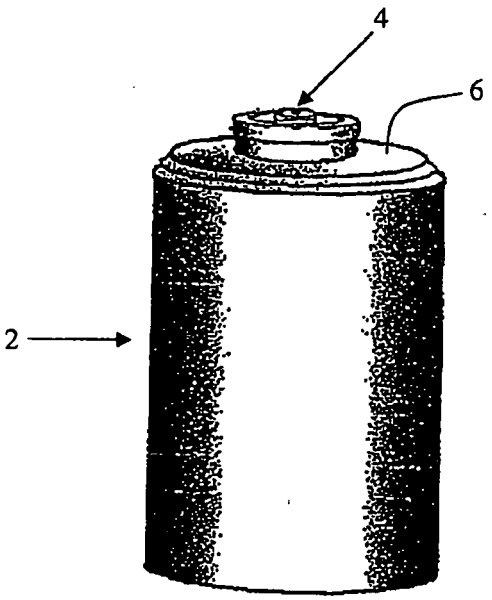

Figure 1A
Prior Art

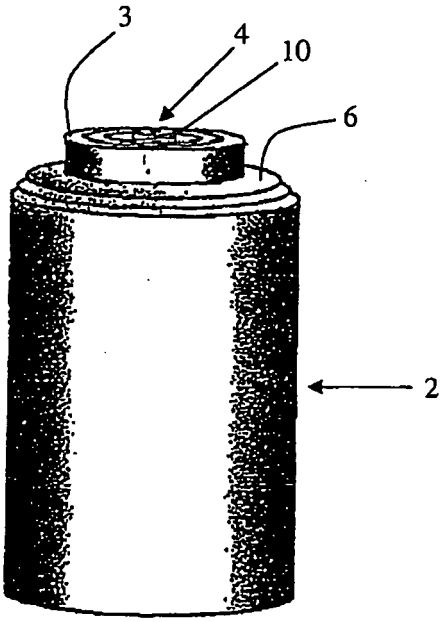

Figure 1B

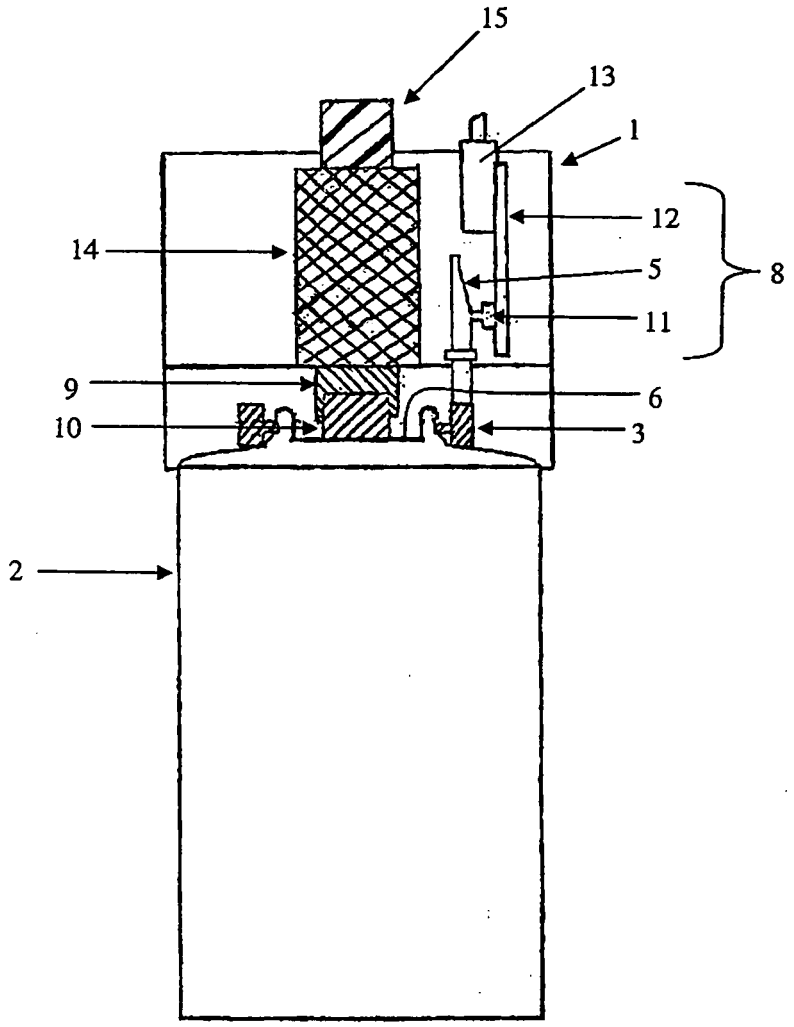

Figure 2

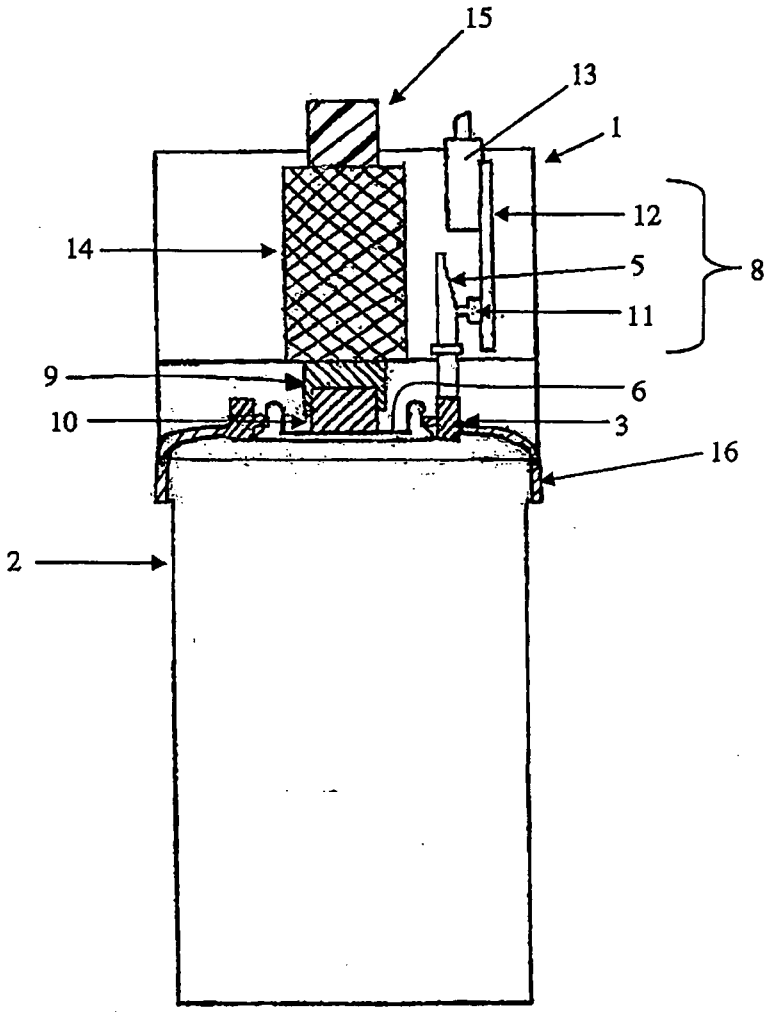

Figure 3

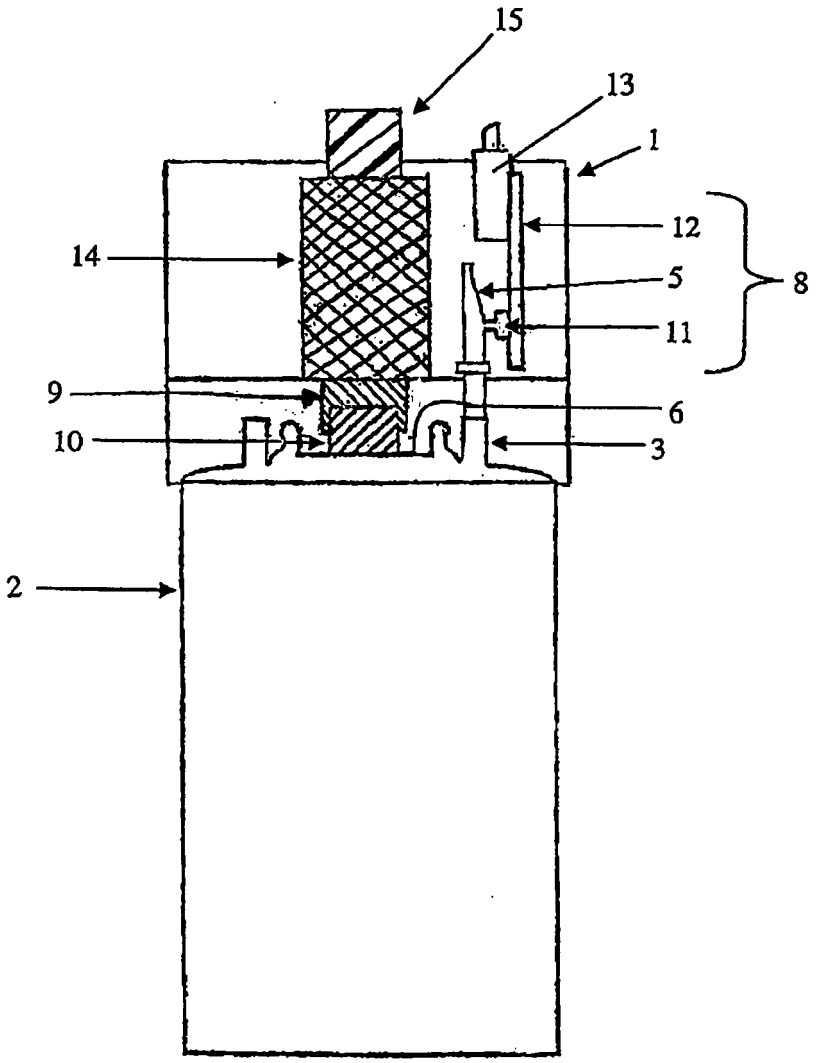

Figure 4

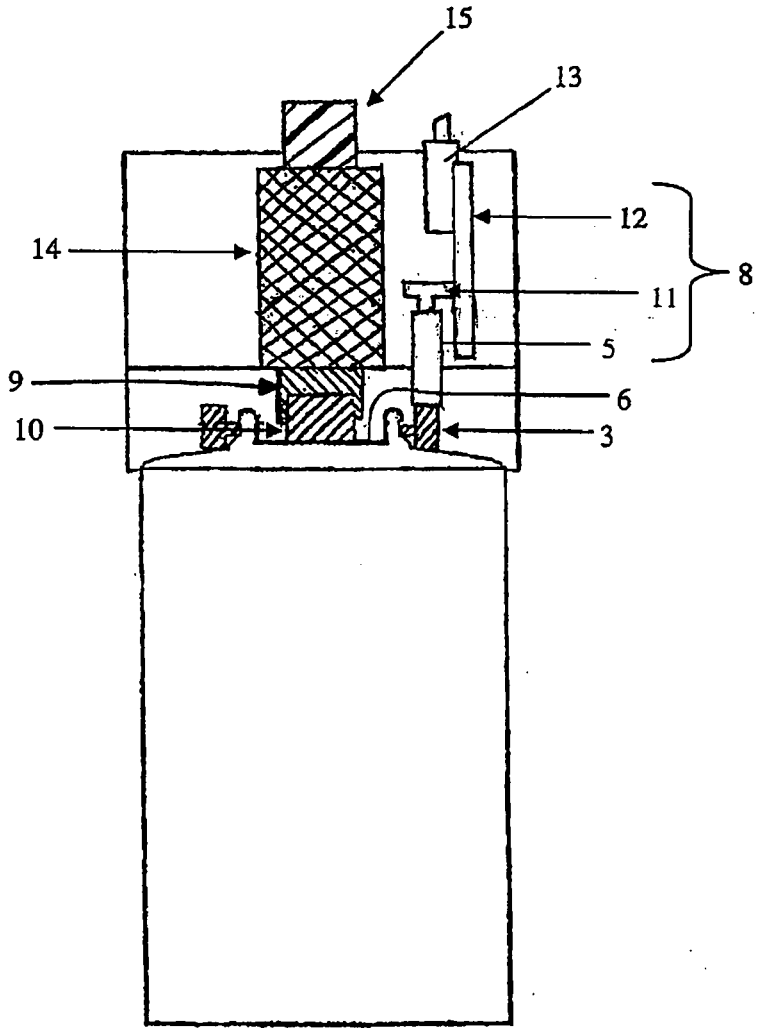

Figure 5

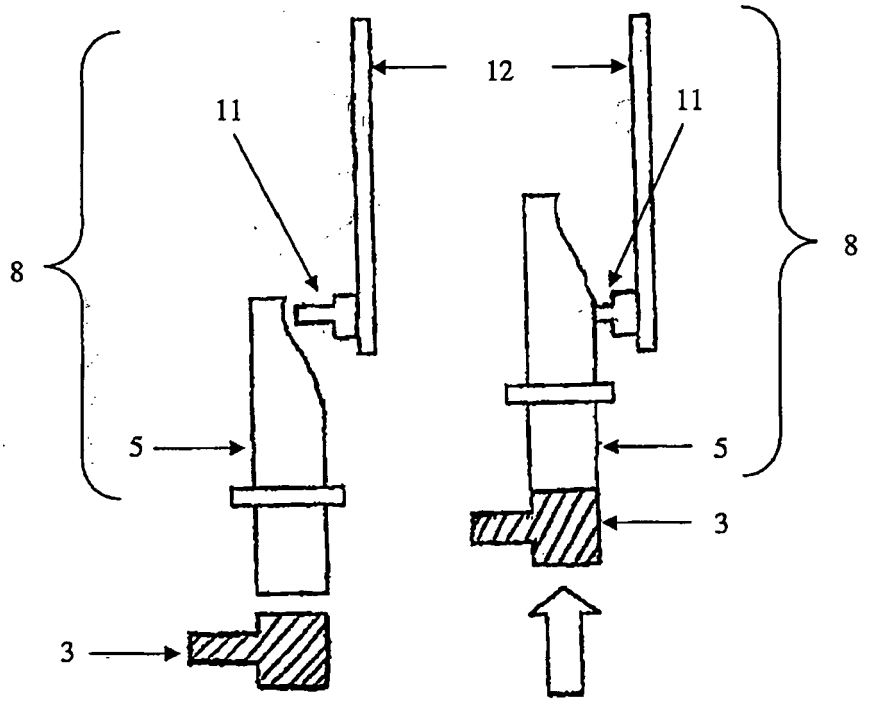

Figure 6A

Figure 6B

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EUROPEAN SEARCH REPORT

Application Number
EP 11 17 4674

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Place of search	Date of completion of the search	Examiner
The Hague	9 August 2011	Menn, Patrick

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