May 3, 1966 E. I. BENEDIKTSON 3,249,261

POST-USE FOAMING PREVENTION MEANS FOR AEROSOL FOAM TYPE CONTAINERS

Filed Aug. 30, 1963

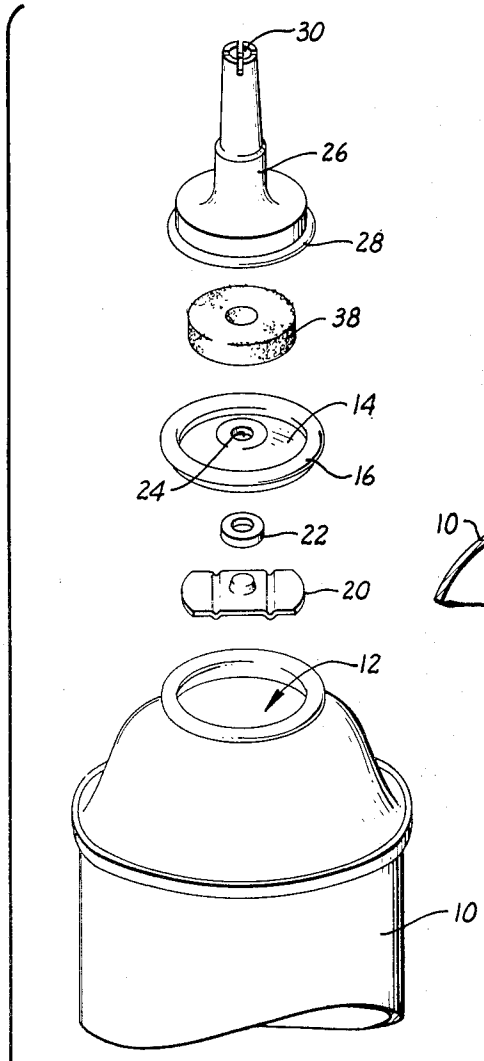


FIG. 1.

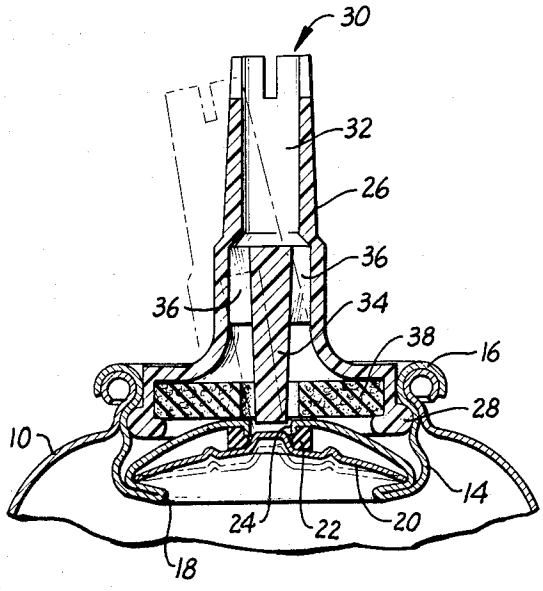


FIG. 2.

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United States Patent Office 3,249,261 Patented May 3, 1966

3,249,261

POST-USE FOAMING PREVENTION MEANS FOR AEROSOL FOAM TYPE CONTAINERS

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Filed Aug. 30, 1963, Ser. No. 305,751
7 Claims. (Cl. 222—190)

This invention relates to aerosol containers and more particularly to post-use foaming prevention means for aerosol foam type containers.

In the dispensing of foam type materials such as shaving cream, whipped cream, and the like from aerosol containers, the material to be dispensed passes from a valve through an expansion passageway where it expands into a foam and hence through a discharge orifice. In the dispensing of materials in this manner, a problem referred to as post-use foaming is encountered where material in the expansion passageway continues to expand after the valve of the container is closed so that foam continues to flow slowly from the discharge orifice thereby creating annoying, unsightly and unsanitary conditions.

In accordance with this invention, I have found that this post-use foaming can be prevented by incorporating into the device a body of spongy material which communicates with the expansion passageway or discharge confines of the dispensing mechanism to absorb residual foam products in these areas. I have further found that this action of the spongy material in preventing post-use foaming is substantially enhanced by positioning the spongy material so that it is compressed as the container valve is opened and is decompressed as the container valve is closed.

Other objects and advantages of the invention will become apparent from the following description read in conjunction with the attached drawings in which:

FIG. 1 is an exploded view in elevation illustrating the components of an aerosol dispensing mechanism constructed in accordance with the principles of this invention, and

FIG. 2 is a view in vertical section of the assembled elements of FIG. 1 with the elements illustrated in full line in the valve closed position and illustrated in phantom line in the valve open position.

Referring now in detail to the drawing, the aerosol container illustrated therein comprises a container body **10** defining a cavity **12** in which is impounded a body of foamable whipping cream or the like. Mounted in the mouth of the body **10** is a valve body **14** secured to the container body by a rolled lip **16** and having a lower rolled flange **18** which supports a spring valve member **20** which together with a sealing washer **22** seals a central opening **24** in the valve body.

A valve operating and discharge cap **26** is mounted in the upper opening of the valve body **16**, the cap **26** being formed of a resiliently deformable plastic having a peripheral rib **28** on its lower end by which it is secured within the valve body **16** as illustrated in FIG. 2. The cap **26** has an upper discharge orifice **30** and a central passageway **32** which connects the orifice **30** to the central opening **24** in the valve body **14**. A stem **34** is mounted in the passageway **32** by means of a plurality of radial ribs **36** integrally formed with the cap and stem. An annular ring of polyurethane foam **38** is mounted in the cap **26** in engagement with the top of the valve body **14**.

In operation of the dispensing valve illustrated in FIG. 2, the top portion of the cap **26** is pushed to one side as to the phantom line position illustrated therein in which position the central stem **34** of the valve cap engages the center of the spring valve member **20** to push it downwardly and unseat it from the sealing ring **22**. Pressurized material may then flow around the spring valve member **20**, through the opening **24** in the valve body and hence upwardly through the valve cap to be discharged from the discharge orifice **30** after expanding while it travels through the passageway **32**. Obviously, depending on the length and volume of the passageway **32**, the expansion and foaming of the material may occur both inside the cap **26** and after the material has passed through the orifice **30**. When the cap **26** is released, the spring valve member **20** again engages the ring **22** to seal the container, and the foamable materials remaining in the passageway **32** are absorbed by the spongy ring **38**.

It should be noted that when the valve cap **26** is pressed to one side to open the valve, the base of the cap is deformed, the right side illustrated in FIG. 2 deforming to an increased radius of curvature while the left side illustrated in FIG. 2 deforms to a smaller radius of curvature. This deformation of the cap compresses the sponge ring **38** between the underside of the cap and the top of the valve body **14** so that foamable material absorbed in the sponge after the last use of the dispenser may be expelled from the sponge; the compressed sponge is decompressed when the cap is moved back to its valve closing position to thereby return the sponge to fluid absorbing position with the spongy material actually exerting some degree of suction on the passageway **32** during decompression.

While one specific embodiment of this invention has been illustrated and described in detail herein, it is obvious that many modifications thereof may be made without departing from the spirit and scope of the invention.

I claim:

1. In a dispensing device having a discharge valve for discharging a fluid under pressure, a discharge orifice, and an expansion passageway between said valve and said orifice for conducting discharged material from said valve to said orifice while permitting said material to expand, said passageway being open to said orifice to permit fluid pressure therein to equalize with that to the exterior of said orifice, the improvement comprising a body of spongy material confined in the entirety thereof in said device in communication with said passageway upstream of said orifice whereby foaming of material from said orifice after closing of said valve is prevented.

2. In a dispensing device having a discharge valve for discharging a fluid under pressure, a discharge orifice, and an expansion passageway between said valve and said orifice for conducting discharged material from said valve to said orifice while permitting said material to expand, said passageway being open to said orifice to permit fluid pressure therein to equalize with that to the exterior of said orifice, the improvement comprising, a spongy body of porous and compressible material mounted in said device in communication with said passageway and positioned to be compressed when said valve is open and decompressed when said valve is closed.

3. An aerosol container comprising a body defining a cavity for impounding at superatmospheric pressure a material to be dispensed, a valve mounted in said container for dispensing material from said cavity, a discharge orifice, a passageway between said valve and said discharge orifice for conducting discharged material from said valve to said orifice while permitting said material to expand, said passageway being open to said orifice to permit fluid pressure therein to equalize with that to the exterior of said orifice, and a body of spongy material confined in the entirety thereof in said container outside of said cavity and communicating with said passageway upstream of said orifice.

4. An aerosol container comprising a body defining a cavity for impounding at superatmospheric pressure a material to be dispensed, a valve mounted in said container for dispensing material from said cavity, a discharge orifice, a passageway between said valve and said

discharge orifice for conducting discharged material from said valve to said orifice while permitting said material to expand, said passageway being open to said orifice to permit fluid pressure therein to equalize with that to the exterior of said orifice, and a spongy body of porous and compressible material mounted in said container outside said cavity and communicating with said passageway with said body positioned to be compressed when said valve is open and decompressed when said valve is closed.

5. An aerosol container comprising a body defining a cavity for impounding at superatmospheric pressure a material to be dispensed; a valve mounted in said container for dispensing material from said cavity; a deformable cap on said container having a discharge orifice, a passageway connecting said orifice to said valve for conducting discharged material from said valve to said orifice while permitting expansion of said material in said passageway, said passageway being open to said orifice to permit fluid pressure therein to equalize with that to the exterior of said orifice, and manipulating means for opening said valve responsive to deformation of said cap; and a spongy body of porous and compressible material mounted in said cap in communication with said passageway and positioned to be compressed by said cap when said cap is deformed to open said valve and to be decompressed by said cap when said cap is relaxed to close said valve.

6. An aerosol dispenser of foamed materials comprising a container defining a cavity, a body of material impounded in said cavity at superatmospheric pressure and adapted upon release from said cavity to expand into a foam at atmospheric pressure, a valve mounted in said container for dispensing said material from said cavity, a discharge orifice, a passageway between said valve and said discharge orifice for conducting discharged material from said valve to said orifice while permitting said material to expand, said passageway being open to said orifice to permit fluid pressure therein to equalize with that to the exterior of said orifice, and a body of spongy material confined in the entirety thereof in said container outside of said cavity and communicating with said passageway upstream of said orifice, whereby foaming of said material from said orifice after closing of said valve is prevented.

7. An aerosol dispenser of foamed materials comprising a container defining a cavity, a body of material impounded in said cavity at superatmospheric pressure and adapted upon release from said cavity to expand into a foam at atmospheric pressure, a valve mounted in said container for dispensing material from said cavity, a discharge orifice, a passageway between said valve and said discharge orifice for conducting discharged material from said valve to said orifice while permitting said material to expand, said passageway being open to said orifice to permit fluid pressure therein to equalize with that to the exterior of said orifice, and a spongy body of porous and compressible material mounted in said container outside said cavity and communicating with said passageway with said body positioned to be compressed when said valve is open and decompressed when said valve is closed, whereby foaming of said material from said orifice after closing of said valve is prevented.

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