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(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2004/0173558 A1****Chen**(43) **Pub. Date:****Sep. 9, 2004**(54) **BOTTLES FOR FLOWABLE ADHESIVE**(52) **U.S. Cl.** **215/12.1; 215/381; 222/92; 222/105**(76) **Inventor:** **Fang-Pin Chen, Chia Yi Hsien (TW)**

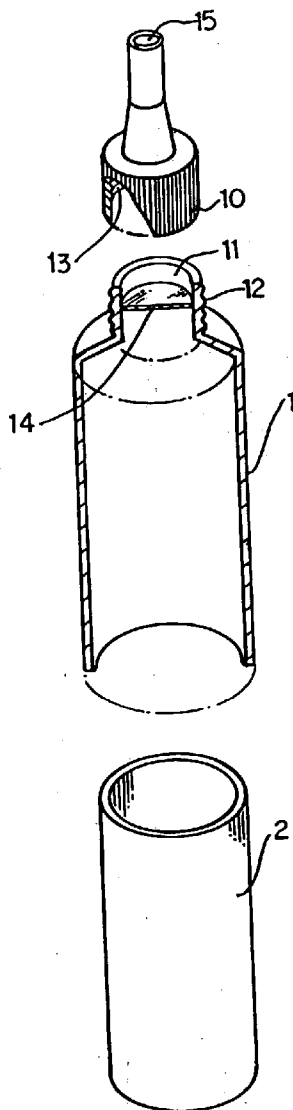
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(57) **ABSTRACT**

A bottle for flowable adhesive includes an outer tube made of soft metal and an inner tube made from a material that allows the inner tube to restore its original shape when an external squeezing force applied to the outer tube is released. The inner tube has an outer diameter the same as an inner diameter of the outer tube, with an outer peripheral face of the inner tube being in intimate contact with an inner peripheral face of the outer tube. When the outer tube is squeezed, the flowable adhesive contained in the inner tube is dispensed through the spout of the dispensing member. The outer tube restores its original shape when the external squeezing force applied to the outer tube is released, as the inner tube pushes the outer tube outwardly when the inner tube is restoring its original shape.



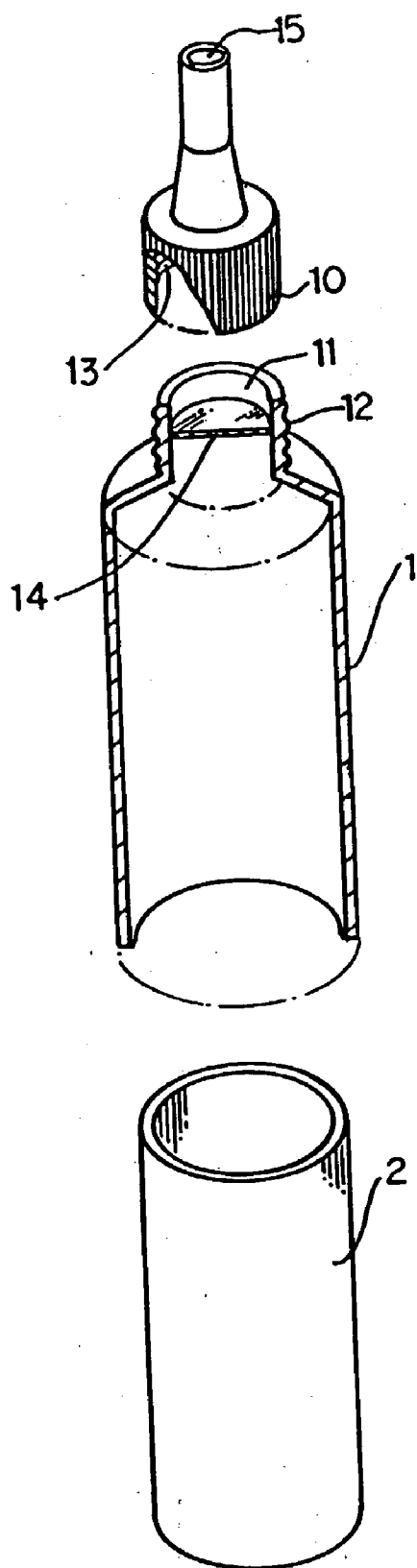


FIG. 1

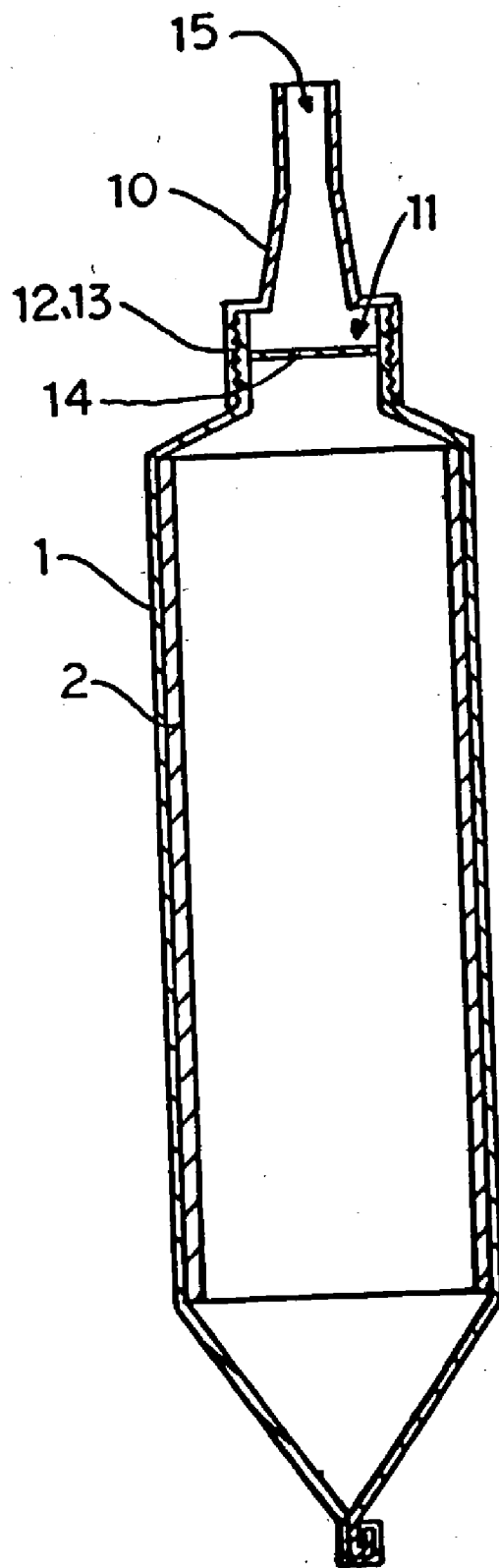


FIG. 2

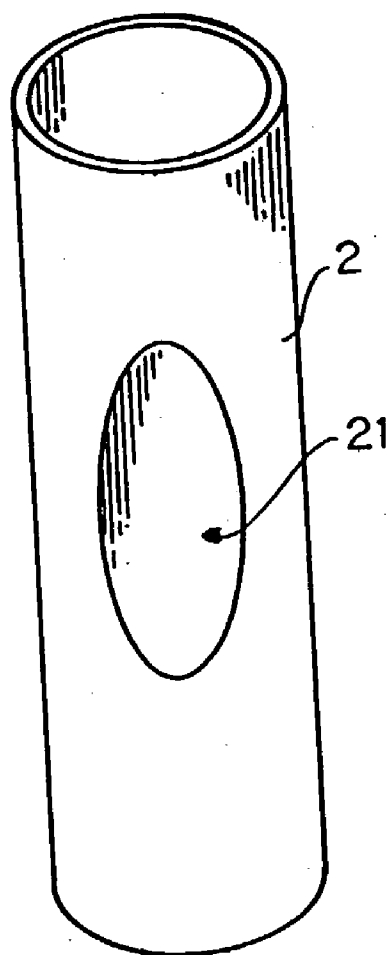


FIG. 3

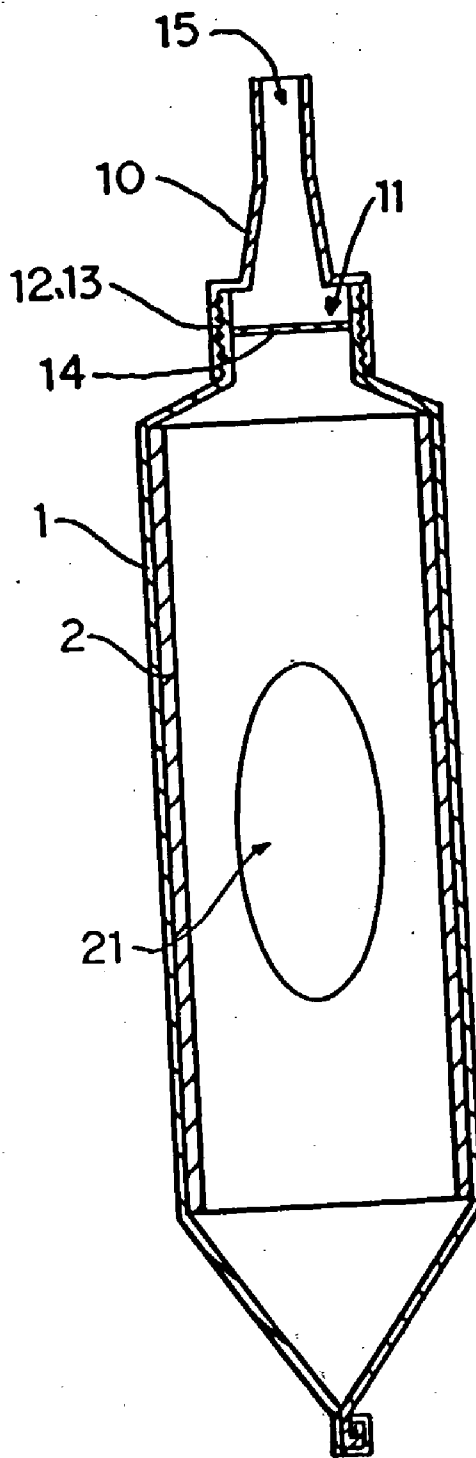


FIG. 4

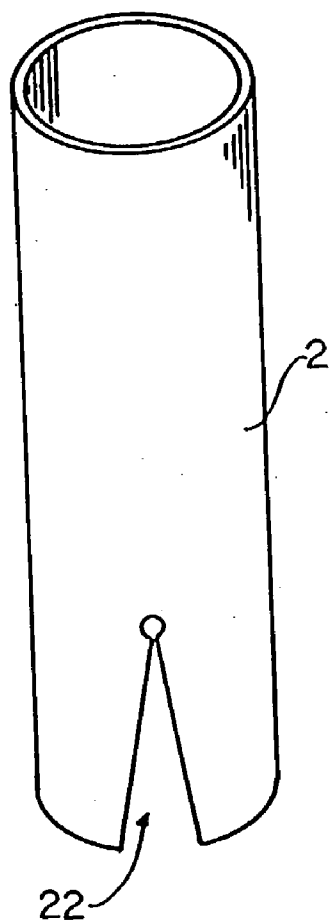


FIG. 5

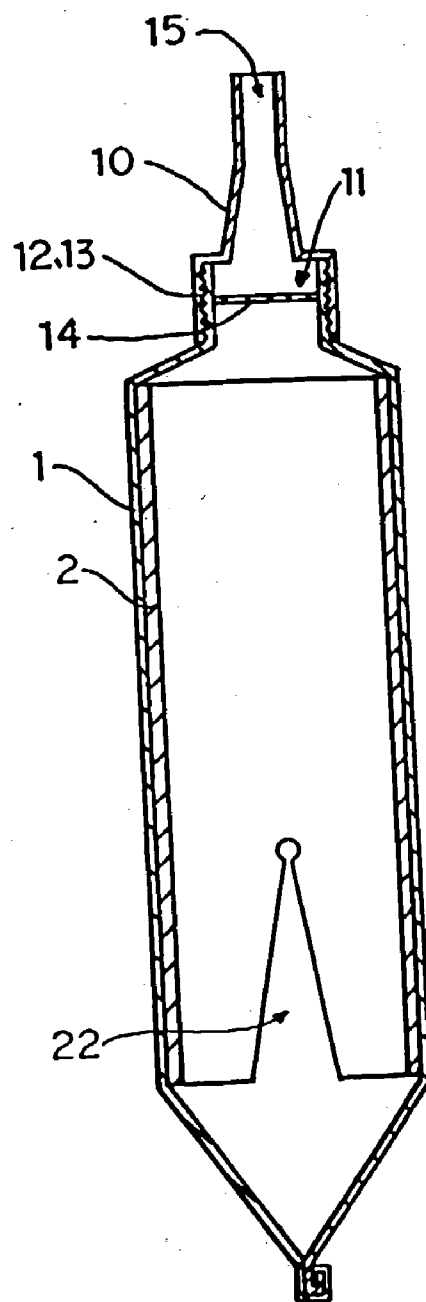


FIG. 6

BOTTLES FOR FLOWABLE ADHESIVE

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to bottles for flowable adhesive.

[0003] 2. Description of the Related Art

[0004] A typical bottle for containing flowable adhesive is generally made from plastic material, and the user may squeeze the plastic bottle to make the flowable adhesive flow out of the bottle via a dispensing member. However, the plastic bottle could not be used to contain adhesives sensitive to water, such as cyano acrylic acid resin and solvent-containing adhesives, as these adhesives would deteriorate in the plastic bottle.

[0005] There are also bottles made from soft metal such as aluminum for containing the adhesives sensitive to water. A bottle made from soft metal is impermeable, which is particularly useful to steam. Thus, the bottle made from soft metal is useful for containing flowable adhesives, particularly cyano acrylic acid resin. However, when the bottle is squeezed, it is maintained in the squeezed state and could not restore its original shape. As a result, the adhesive in the bottle could not stop flowing out of the bottle unless a pressure balance is obtained again. Further, when the bottle made of soft metal is not full of flowable adhesive, it is difficult to squeeze the flowable adhesive out of the bottle, and it is difficult for the user to squeeze the desired amount of the flowable adhesive out of the bottle.

SUMMARY OF THE INVENTION

[0006] In accordance with the present invention, a bottle for flowable adhesive includes an outer tube made of soft metal and an inner tube made from a material that allows the inner tube to restore its original shape when an external squeezing force applied to the outer tube is released. The inner tube has an outer diameter the same as an inner diameter of the outer tube, with an outer peripheral face of the inner tube being in intimate contact with an inner peripheral face of the outer tube.

[0007] Since the outer tube is made from soft metal such as aluminum, it is airtight. When the outer tube is squeezed, the flowable adhesive contained in the inner tube is dispensed through the spout of the dispensing member. The outer tube restores its original shape when the external squeezing force applied to the outer tube is released, as the inner tube pushes the outer tube outwardly when the inner tube is restoring its original shape. Further, the negative pressure in the bottle may suck a portion of the dispensed flowable adhesive back into the bottle, thereby allowing the user to control the desired amount to be used.

[0008] Other objects, advantages, and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. 1 is an exploded perspective view of a bottle for flowable adhesive in accordance with the present invention.

[0010] FIG. 2 is a sectional view of the bottle for flowable adhesive in accordance with the present invention.

[0011] FIG. 3 is a perspective view of another embodiment of an inner tube of the bottle for flowable adhesive in accordance with the present invention.

[0012] FIG. 4 is a sectional view of a bottle using the inner tube in FIG. 3.

[0013] FIG. 5 is a perspective view of a further embodiment of the inner tube of the bottle for flowable adhesive in accordance with the present invention.

[0014] FIG. 6 is a sectional view of a bottle using the inner tube in FIG. 5.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0015] Referring to FIGS. 1 and 2, a bottle for flowable adhesive in accordance with the present invention generally comprises an inner tube 2, an outer tube 1, and a dispensing member 10. The outer tube 1 is made from soft metal such as aluminum. A mouth 11 is formed on an upper end of the outer tube 1. A film 14 is used to seal the mouth 11. At the first time using the bottle, the film 14 is pierced to allow the flowable adhesive contained in the bottle to flow out of the bottle. The mouth 11 has an outer threading 12 for threading engagement with an inner threading 13 of the dispensing member 10 having a spout 15. The outer tube 1 is open at the bottom end thereof for filling flowable adhesive, and the bottom end is sealed after filling.

[0016] The inner tube 2 is mounted in the outer tube 1 and made from polyethylene, polypropylene, or Teflon. Thus, the inner tube 2 may restore its original shape after a squeezing force applied to it is released. Preferably, the inner tube 2 has an outer diameter the same as an inner diameter of the outer tube 1. Thus, an outer peripheral face of the inner tube 2 is in intimate contact with an inner peripheral face of the outer tube 1 when the inner tube 2 is mounted in the outer tube 1. The inner tube 2 may include an opening 21 in the periphery thereof (FIGS. 3 and 4) or a cutout 22 in the periphery thereof (FIGS. 5 and 6). The opening 21 or cutout 22 of the inner tube 2 assists in rapid restoration of the shape of the inner tube 2 when the external squeezing force applied to the outer tube 1 is released.

[0017] Since the outer tube 1 is made from soft metal such as aluminum, it is airtight. When the outer tube 1 is squeezed, the flowable adhesive contained in the inner tube 2 is dispensed through the spout 15 of the dispensing member 10. The outer tube 1 restores its original shape when the external squeezing force applied to the outer tube 1 is released, as the inner tube 2 pushes the outer tube 1 outwardly when the inner tube 2 is restoring its original shape. Further, the negative pressure in the bottle may suck a portion of the dispensed flowable adhesive back into the bottle, thereby allowing the user to control the desired amount to be used.

[0018] Although the invention has been explained in relation to its preferred embodiment, it is to be understood that many other possible modifications and variations can be made without departing from the scope of the invention as hereinafter claimed.

What is claimed is:

1. A bottle for flowable adhesive comprising:

an outer tube made of soft metal; and

an inner tube made from a material that allows the inner tube to restore its original shape when an external squeezing force applied to the outer tube is released, the inner tube having an outer diameter the same as an inner diameter of the outer tube, with an outer peripheral face of the inner tube being in intimate contact with an inner peripheral face of the outer tube.

2. The bottle for flowable adhesive as claimed in claim 1, wherein the outer tube includes a mouth with an outer threading for threading engagement with an inner threading of a dispensing member.

3. The bottle for flowable adhesive as claimed in claim 1, wherein the inner tube includes at least one opening in a periphery thereof.

4. The bottle for flowable adhesive as claimed in claim 1, wherein the inner tube includes at least one cutout in a periphery thereof.

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