SET OF CONTAINERS

Inventor: Andreas Mullner, Vienna (AT)

Correspondence Address:
CHAPMAN AND CUTLER
111 WEST MONROE STREET
CHICAGO, IL 60603

Assignee: Tupack Verpackungen Gesellschaft m.b.H., Vienna (AT)

Appl. No.: 12/070,037
Filed: Feb. 14, 2008

Foreign Application Priority Data

Publication Classification
Int. Cl.
B65D 21/032 (2006.01)
U.S. Cl ................................................. 215/10

ABSTRACT
In a set of containers consisting of a first container with a container neck comprising an external thread and an opening and a second container comprising an opening, whereby the container neck of the first container can be brought into a positive locking connection with the opening of the second container, the opening of the second container comprises a plurality of toothlike protrusions on its inner circumference spaced apart from each other in the circumferential direction and extending transversely to the axis of the opening, which protrusions can be brought into engaging connection with the external thread of the first container.
SET OF CONTAINERS


[0002] The invention relates to a set of containers consisting of a first container with a container neck comprising an external thread and an opening and a second container comprising an opening, whereby the container neck of the first container can be brought into a positive locking connection with the opening of the second container.

[0003] Such a set of containers has become known from the EP 572645 B1. Such a device serves for the mixing of two different, separately stored products and in this device a collapsible tube having a tube neck with an external thread is provided, which can cooperate with the opening of a container having an internal thread, in order to allow for the transmission of the content of the tube collapsible tube into the interior of the other collapsible tube, whereby the design of the engaging parts can be in a way as to break open on assembly optionally provided seals on one of the two containers to be put together. Such a device shows certain disadvantages regarding handling. For one it is envisaged in such a device that both containers to be put together have exact complementary threads, which naturally confines the flexibility of such a system in that the two containers have to be exactly matched with regard to the design of their threads. Furthermore, by the use of threads a screwing-together is necessary for the achievement of a stable connection, which naturally involves a relatively coordinated handling if not multiple regrips on at least one of the containers during the screwing-in procedure. Moreover, it does not seem desirable in a connection of two containers, whose content should be mixed with each other, to establish an airtight connection, as it normally would be the case by the use of threads. In such a case the squeezing of the content of the one container, which for example is designed as a collapsible tube, into the other container would be greatly impeded due to rise in pressure, such that the leakage of the excess pressure would be desirable in this context.

[0004] It is thus an object of the present invention to provide a set of containers, in which the connection of the two containers is achieved in a particularly flexible and easy manner, whereby the rise in pressure in the container, which should be filled with the content of the other container, should be prevented.

[0005] To solve this object according to the invention, it is envisaged that the opening of the second container comprises a plurality of toothlike protrusions on its inner circumference spaced apart from each other in the circumferential direction and extending transversely to the axis of the opening, which protrusions can be brought into engaging connection with the external thread of the first container.

[0006] By the opening of the second container comprising a plurality of toothlike protrusions on its inner circumference spaced apart from each other in the circumferential direction and extending transversely to the axis of the opening, which protrusions can be brought into engaging connection with the external thread of the first container, it is possible to achieve a higher flexibility regarding the compatibility of the separate components as an internal thread having a defined lead is not used in this case. Only protrusions are envisaged that can cooperate with a thread with a lead arbitrary over a wide range, such that basically only the diameter of the container neck having the external thread is of importance for use with the second container having the protrusions.

[0007] Another advantage of such an embodiment lies therein, that contrary to systems, in which conventional threads are in use, it is possible to do without the screwing-together of both containers. As the engagement of the toothlike protrusions is effected merely in one plane of the thread and the thread does not cooperate along the whole lead with a counter thread, the container neck having the external thread can easily be inserted into the opening by using a relatively small effort and by the elastic giving way of the comparatively small dimensioned toothlike protrusions and can then be snapped into place. An intricate screwing-together of the two containers can thus be avoided, which seems to be desirable in particular for the use of the set of containers for products for single use, which are in use for example in the field of cosmetics or hair care.

[0008] The embodiment is hereby devised such that the toothlike protrusions are arranged in a plane orthogonal to the axis of the opening, whereby a sufficient positive locking is achieved. Thus it is not necessary to provide a thread in the opening of the second container.

[0009] The arrangement of the toothlike protrusions according to the invention provides in a simple manner the possibility for venting and in this context it is envisaged that between the toothlike protrusions venting cross sections are provided in each case. These venting cross sections ensure that air pressed out of the second collapsible tube by the introduction of the content of the first collapsible tube cannot escape between the protrusions without problems. In this context, it is also conceivable to provide embossments in the projection of the protrusions in direction of the axis towards the upper brim of the opening with respect to the diameter such that even if the diameter of the external thread of the container neck of the first container comes into full contact a sufficient venting is safeguarded.

[0010] In a particularly advantageous manner, the opening of the second container is devised such that it has merlons on its upper brim in axial extension of the protrusions. In such an embodiment, even during hard pressing-on of the first container onto the opening of the second container, whereby naturally a tight screwing-together action is also conceivable, it is safeguarded that a sealing connection between the upper brim of the second container and the shoulder joining the container neck of the first container cannot occur so that the necessary pressure release during the introduction of the content of the one container into the other one is ensured.

[0011] In a particularly advantageous manner the merlons are thereby devised such that the merlons extend radially outwardly from the inner circumference of the opening. Such an embodiment gives the merlons an increased rigidity such that even in inadvertent hard pressing-on or screwing-in of the first container onto the opening of the second container a sufficient venting is safely achieved in the region of the upper brim of the opening of the second container.

[0012] The inventive device is advantageously devised such, that the protrusions are designed having a thickness decreasing radially inwardly, whereby the thickness hereby denotes the thickness of the toothlike protrusions in the direction of the axis of the opening of the second container. The design of the protrusions having a radially inwardly decreasing thickness leads to the fact, that the protrusions have a certain sharpness with respect to a thread, which is screwed
into the opening of the second container, which is of paramount importance in particular if differing materials are used for the two containers according to the invention, whereby a material of greater hardness can for example be chosen for the second container. In this case the toothlike protrusions can even carve into the thread on the outer circumference of the container neck of the first container and allow a greater flexibility with respect to the leads of the threads, which can be used in the system according to the invention.

[0013] In a particularly advantageous manner, the set of containers is devised such, that the opening is formed in a container neck provided with an external thread. In this way, the inventive opening of the second container can be closed in the conventional manner with a tube cap, which is particularly desirable with respect to a lasting storage of the constituent components or the mixture.

[0014] The invention will now be described with respect to an embodiment schematically illustrated in the accompanying drawing.

[0015] In this FIG. 1 shows a side view partially in section of the set of containers,

[0016] FIG. 2 a view in the assembled state and

[0017] FIG. 3 a plan view of a container having the opening according to the invention.

[0018] In FIG. 1 a set of containers is denoted by 1, which consists of a first container 2 and a second container 3, whereby the first container 2 features a container neck 4 with an external thread. The second container 3 features a container neck with an opening 5, on the inner circumference of which toothlike protrusions 6 are formed. The toothlike protrusions 6 can be brought into engaging connection with the container neck 4 of the first container 2 having the external thread both by pressing-in and screwing-in. The upper brim 7 of the opening 5 of the second container 3 features merlons 8, which prevent a sealing abutment of the shoulder 9 of the first container 2. The merlons are hereby broadening radially outwardly, which awards them an increased stability.

[0019] In FIG. 2 the container set 1 is shown in the assembled state, whereby it can clearly be seen, that the merlons 8 keep the shoulder 9 of the first container 2 away from the upper brim 7 of the second container 3, whereby keeping-free of the venting cross sections is safeguarded.

[0020] In FIG. 3 the venting cross sections between the toothlike protrusions 6 are denoted by 11.

1-15. (canceled)

16. A set of containers, comprising:
a first container comprising a container neck which comprises an external thread and an opening, and
a second container comprising an opening, wherein the container neck of the first container is adapted to engage in a positive locking connection with the opening of the second container, and
the opening of the second container comprises a plurality of toothlike protrusions on an inner circumference of said opening of the second container, said toothlike protrusions being spaced apart from each other in a circumferential direction, and extending transversely to an axis of the opening of the second container, and
said toothlike protrusions being adapted to engage with the external thread of the first container by plugging-on or screwing-in.

17. The set of containers according to claim 16, wherein the toothlike protrusions are arranged in a plane orthogonal to the axis of the opening of the second container.

18. The set of containers according to claim 16, further comprising venting cross sections positioned between the toothlike protrusions.

19. The set of containers according to claim 16, wherein the opening of the second container comprises merlons positioned on an upper brim of said opening of the second container, in axial extension of the toothlike protrusions.

20. The set of containers according to claim 19, wherein the merlons extend radially outwardly from the inner circumference of the opening of the second container.

21. The set of containers according to claim 16, wherein the toothlike protrusions have a radially inwardly decreasing thickness.

22. The set of containers according to claim 16, wherein the opening of the second container is formed in a container neck comprising an external thread.

23. The set of containers according to claim 16, wherein one or more of the first container and the second container are collapsible tubes.

24. A container for use in a set of containers, comprising:
an opening that comprises a plurality of toothlike protrusions on an inner circumference of said opening of the container, said toothlike protrusions being spaced apart from each other in a circumferential direction, and extending transversely to an axis of the opening of the container, wherein said toothlike protrusions are adapted to engage with an external thread positioned on a container neck of a second container by plugging-on or screwing-in.

25. The container according to claim 24, wherein the toothlike protrusions have a radially inwardly decreasing thickness.

26. The container according to claim 24, further comprising venting cross sections positioned between the toothlike protrusions.

27. The container according to claim 24, wherein the opening of the container comprises merlons positioned on an upper brim of the opening, in axial extension of the toothlike protrusions.

28. The container according to claim 24, wherein the merlons extend radially outwardly from the inner circumference of the opening.

29. The container according to claim 24, wherein the opening is formed in a container neck comprising an external thread.

30. The container according to claim 24, wherein the container is a collapsible tube.

31. The set of containers according to claim 17, further comprising venting cross sections positioned between the toothlike protrusions.

32. The set of containers according to claim 17, wherein the opening of the second container comprises merlons positioned on an upper brim of said opening of the second container, in axial extension of the toothlike protrusions.

33. The set of containers according to claim 17, wherein one or more of the first container and the second container are collapsible tubes.

34. The set of containers according to claim 18, wherein one or more of the first container and the second container are collapsible tubes.

35. The set of containers according to claim 19, wherein one or more of the first container and the second container are collapsible tubes.