The present disclosure describes a lid piercer that pierces or punctures the lid of a small container. The container may hold a filler that is a liquid, gel, powder or granules needed for a specific task. The lid piercer is desirably usable with one hand. Also provided is an oral care kit that contains the lid piercer; such a kit includes a bag containing implements needed to perform oral care for a patient. The kit also has a container of oral care solution and the container is made from a cup with a top or lid covering it. The kit also has a lid piercer disposed in relation to the container such that a user may bend the tip of the lid piercer into the top of the container to pierce the top and release the oral care solution.
FIG. 4
LID PIERCER AND KIT

BACKGROUND

[0001] The present disclosure relates to an apparatus and kit for opening a small container using only one hand.

[0002] One area of applicability for this apparatus and kit is for preparing a solution for cleaning the mouths of patients incapable of performing this task themselves. This incapacity means that the oral care needs of the patient must be performed by a medical professional, typically a nurse. Current hospital schedules and responsibilities favor the use of the most efficient and least time intensive procedures and products for each task.

[0003] The task of oral care generally uses implements such as single use applicators and suction apparatus. The applicators may have absorbent foam on the distal end which serves to absorb a cleaning solution that may then be applied to the patient’s teeth. The cleaning solution may be provided in a separate container that has a large supply of solution for multiple uses. It is important in the use of a large supply, however, that the cleanliness of the supply be maintained by avoiding the insertion of a used applicator into the supply liquid.

[0004] Alternatively, some suppliers use a “burst pack” of liquid sized to deliver an amount appropriate for a single use. The burst pack is designed to rupture with the application of a predetermined amount of force delivered by the medical professional. The burst pack is typically packaged with the applicator in a single-use bag. When the pack is ruptured, the liquid within it flows to the lowest point in the interior of the bag, where it contacts the absorbent foam of the applicator. One example of this packaging format may be found in U.S. patent application Ser. No. 12/649,730 directed to a pack of oral care items.

[0005] In still another alternative, “peel packs” that have an area of weakness that is separated to open the container, e.g. the interface between peelable lids or foils from walled containers, have also been used. Peel packs unfortunately, require the use of two hands and so are somewhat dissatisfactory when time and efficiency are of the essence.

[0006] While burst pack and peel pack technologies have been accepted considering the lack of satisfactory alternatives, their use can prove challenging. With respect to burst packs they rely on the application of force to rupture the pack; given the range of strength of the individuals charged with opening the pack, some individuals have a difficult time forcing the burst pack to rupture. In some cases opening requires the use of two hands to provide the force; other individuals apply too much force too quickly, which results in a violent rupturing of the pack that can result in spills and leakage. Peel packs, as noted above, require the use of both hands.

[0007] What is needed is a package and method for opening a small container that is easy to use, preferably with a single hand, and that opens the container without an explosive rupture or excessive movement that can uncontrollably spill filled contents and cause delay and additional work for the user.

SUMMARY

[0008] In response to the problems discussed above, there is provided a lid piercer that pierces or punctures the lid of a small container. The container may hold a filler material that is a liquid, gel, powder or granules needed for a specific task. The lid piercer is desirably usable with one hand.

[0009] Also provided is an oral care kit that contains the lid piercer; such a kit includes a bag containing implements needed to perform oral care for a patient. The kit also has a container of oral care solution and the container is made from a cup with a top or lid covering it. The kit also has a lid piercer disposed in relation to the container such that a user may bend the tip of the lid piercer into the top of the container to pierce the top and release the oral care solution.

[0010] The tip of the lid piercer may have an angle between 30 and 150 degrees, more particularly between 60 and 120 degrees and still more particularly between 90 and 110 degrees.

[0011] In the use of the kit, when the lid is pierced, the oral care solution will flow to the lowest portion of the bag where it desirably is absorbed onto the applicator’s absorbent end, which is typically foam. The bag is desirably sealed on all sides and has a frangible region on an upper portion. The bag may then be opened at the upper portion using the frangible region, and the applicator withdrawn from the bag and used in the conventional manner to clean a patient’s teeth and oral cavity.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] FIG. 1 is a drawing of an exemplary lid piercer.

[0013] FIG. 2 shows the lid piercer and container prior to inserting the container into the lid piercer.

[0014] FIG. 3 shows the container being inserted into the lid piercer. Insertion is desirably done by lifting the tip of the lid piercer and inserting the container between the tips in the direction of the bending of the tip.

[0015] FIG. 4 shows the container successfully inserted into the lid piercer.

[0016] FIG. 5 is a drawing of the container inserted into the lid piercer and placed in a bag along with implements for cleaning the mouth.

[0017] FIG. 6 shows the lid piercer within the bag as a user begins to squeeze the tip of the lid piercer into the top of the container to release the oral care solution within the container.

[0018] FIG. 7 shows the lid piercer within the bag as the top of the container is pierced by the tip of the lid piercer by the action of the user.

[0019] FIG. 8 shows the container, lid piercer and implements in the bag after the top of the container has been pierced. Oral care solution has flowed into the bottom of the bag and contacted the distal ends of the implements.

[0020] FIG. 9 shows an implement for oral hygiene as it is removed from the bag. Oral care solution has been absorbed onto the distal end of the implement and excess oral care solution remains in the bottom of the bag.

DETAILED DESCRIPTION

[0022] Reference will now be made to the drawings in which the various elements of the present disclosure will be given numeral designations and in which the disclosure will be discussed so as to enable one skilled in the art to make and use the disclosure. It is to be understood that the following
description is only exemplary of the principles of the present disclosure, and should not be viewed as narrowing the pending claims. Those skilled in the art will appreciate that aspects of the various embodiments discussed may be interchanged and modified without departing from the scope and spirit of the disclosure.

FIG. 1 is an outline of an exemplary lid piercer 10 according to this disclosure. The lid piercer 10 has a central opening 2 sized to accept a container 20 or reservoir. The container 20 may hold a liquid, gel, powder or granules for a particular task. In the embodiment of the kit described herein, the container holds an oral care solution. In the embodiment shown in the Figure, the central opening 2 is about 4.5 cm in diameter and is generally circular in shape. The outer dimensions of the lid piercer of FIG. 1 are about 6.5 by 7 cm. The central opening 2 of the lid piercer 10 as shown is generally circular in shape since the container 20 is circular. The central opening 2 may also be square, rectangular or of any other shape in order to mate with the container 20 chosen to be used. Other dimensions may be used as appropriate for the size of the container and the dimensions given herein are meant to illustrative of one embodiment only. The container in the embodiment shown in the Figures contains about 0.5 ounces (15 mL) of liquid. Other size containers may of course be used provided the dimensions of the lid piercer and other components are adjusted to match appropriately. Containers of from 5 to 50 mL may commonly be used, more particularly between 10 and 25 mL.

The lid piercer 10 has a tip 4 that actually pierces the top 24 of the container 20. The tip 4 desirably comes to a point 12 facing toward the central opening 2 in order to concentrate the force applied by the user and pierce or puncture the top more easily. The tip 4 may form an angle as shown in FIG. 1 of about 105 degrees. More acute or more obtuse angles may be used if desired though tips having an angle between 30 and 150 degrees are believed to be preferred, more particularly between 60 and 120 degrees and still more particularly between 90 and 110 degrees.

In order to help the lid piercer 10 to accept the container 20, the lid piercer 10 desirably has two cut out portions, 6 one on either side of the tip 4. The body 8 of the lid piercer 10 is desirably made from a thin plastic material since the body 8 must be flexible and bend to accept the container 20 without breaking. The body 8 must also be flexible so that the tip 4 can bend to pierce the container 20 without breaking. Common and inexpensive plastics like polyethylene, polypropylene, polyester or other polymeric sheets having a thickness of about 0.1 to 1.5 mm are desirable for the body 8 of the lid piercer 10. The embodiment shown in the drawings has a thickness of 30 mils and is made from glycol modified polyethylene terephthalate (PETG).

FIG. 2 shows the lid piercer 10 and container 20 prior to inserting the container 20 into the lid piercer 10. FIG. 3 shows the container 20 being inserted into the lid piercer 10. Insertion is desirably done by lifting the tip 4 of the lid piercer 10 and inserting the container 20 from the side in the direction of the bending of the tip 4. FIG. 4 shows the container 20 successfully inserted into the lid piercer 10.

As can be discerned from the Figures, the container 20 is desirably made from two parts, a cup 22 and a lid or top 24. The cup 22 is desirably made from a plastic that is stiffer than the body 8 of the lid piercer 10. The top 24 is desirably paper, a foil, a plastic cover or combination thereof, i.e., a laminate that is easily pierced without fragments or pieces being ripped from it. In the embodiment shown in the Figures, the top 24 is an extrusion coated foil having a thickness of about 2.6 mils.

The container 20 may be prepared by filling the cup 22 with the desired amount of the preferred filler, e.g., oral care solution 34 and sealing the top 24 to the cup 22 by methods known to those skilled in the art. The lid piercer 10 may be used to pierce or puncture the top 24 merely by deflecting the lid piercer tip 4 toward the top 24 with the use of the thumb while the other fingers of the same hand cradle the cup 22. This one handed operation is a significant advantage as it frees the other hand.

The container described herein may have a variety of fillers, oral care solution being but one of many. Other fillers may be, for example, food ingredients like sugar, flavorings, sauces, spices, juices and the like. Fillers may be chemicals like chlorine granules, e.g., for pool maintenance, fertilizers, gasoline or oil additives for automobiles and equipment, inks and stains for signage and crafts, and paints. Fillers may also include topically applied substances like skin lotions, make-up remover, shampoo, soap and the like. Fillers may also include medicaments like anti-fungal and anti-biotic ointments, cough and other orally dispensed medicines. Fillers may, in short, include any material that is used in small quantities.

In the use of the oral care kit, the lid piercer 10 with the container 20 inserted, is placed in a flexible bag 30 with, for example, implements 32 to be used in cleaning a patient’s mouth (FIG. 5). The bag 30 is desirably sealed on three sides prior to the insertion of the lid piercer 10, container 20 and implements 32 and may be sealed on the fourth side if desired, e.g., for shipment for example. Alternatively, the bag may be formed by placing the desired contents onto a sheet of material, e.g., plastic, placing another layer of material over the contents, and heat sealing the two layers of material together around the contents. In yet another alternative, the ends of the bag may be heat sealed or joined together by conventional techniques where such seals may be needed. For example, the bottom and top ends may be sealed with conventional heat seals “S” or other conventional sealing techniques. If one or more side seals are needed, the one or more sides may be sealed with conventional heat seals or other conventional sealing techniques. All sides of the bag should be sealed for shipping.

Each bag desirably includes a frangible region located at or adjacent the upper end or top portion. The frangible region may be a series of perforations, a score line or weakened portion of the bag, a tear strip or the like or combinations thereof. This frangible region allows the user to easily and cleanly open the bag to access the contents.

In order to use the kit, the lid piercer 10 is used to pierce the container 20 while it is still in the bag 30 merely by deflecting the lid piercer tip 4 toward the top 24 by applying force to the lid piercer tip 4 with the use of the thumb while the other fingers of the same hand cradle the cup 22. Other means of applying force may also be used and will be equally successful provided sufficient force is applied to puncture the top 24. FIGS. 6 and 7 show the application of force to the lid piercer tip 4 as indicated by the dark arrow “A”. Piercing the top 24 allows the oral care solution 34 to drain from the container 20 into the lower portion or bottom end of the bag 30 (usually the end opposite the end with the frangible region) where the oral care solution 34 comes in contact with the implements 32 (FIG. 8). As shown in the Figures, the imple-
ments 32 may desirably be made from or have attached to their distal ends foam 36 or other liquid absorbent material to absorb the oral care solution 34. The implements, 32 now saturated with oral care solution 34 may then be removed from the bag 30 and used (FIG. 9).

[0033] As used herein and in the claims, the term “comprising” is inclusive or open-ended and does not exclude additional unrecited elements, compositional components, or method steps.

[0034] While various patents have been incorporated herein by reference, to the extent there is any inconsistency between incorporated material and that of the written specification, the written specification shall control. In addition, while the disclosure has been described in detail with respect to specific embodiments thereof, it will be apparent to those skilled in the art that various alterations, modifications and other changes may be made to the disclosure without departing from the spirit and scope of the present disclosure. It is therefore intended that the claims cover all such modifications, alterations and other changes encompassed by the appended claims.

What is claimed is:

1. A lid piercer for a container comprising a central opening adapted to accept said container and formed in a body, said body further comprising a tip adapted to pierce a top of said container.
2. The lid piercer of claim 1 wherein said container holds between 5 and 50 mL of a filler.
3. The lid piercer of claim 1 having a body made from a thin plastic material.
4. The lid piercer of claim 1 wherein said body is made from a polyolefin.
5. The lid piercer of claim 1 wherein said tip is formed at an angle of between 90 and 110 degrees.

6. The lid piercer of claim 1 wherein said lid piercer can be used to pierce the top of said container by a user using only one hand.
7. The lid piercer of claim 1 wherein said filler is selected from the group consisting of food ingredients, beverages, chemicals, topically applied substances and medicaments.
8. A kit for oral care, the kit comprising a bag containing implements needed to perform oral care for a patient; a container of oral care solution having a cup and a top covering said cup and; a lid piercer disposed in relation to said container such that a user may bend a tip of said lid piercer into the top of said container to pierce said top.
9. The kit of claim 8 wherein said implements have a distal end that comprises a material that absorbs liquid.
10. The kit of claim 8 wherein said oral care solution flows to a bottom of said bag and contacts the distal end of said implements after said top is pierced by said tip.
11. The kit of claim 8 wherein said bag is sealed on all sides and has a frangible region on an upper portion.
12. The kit of claim 8 wherein said tip forms an angle between 50 and 150 degrees.
13. The kit of claim 8 wherein said tip forms an angle between 60 and 120 degrees.
14. The kit of claim 8 wherein said tip forms an angle between 90 and 110 degrees.
15. The kit of claim 8 wherein said lid piercer can be used to pierce the top of said container by a user using only one hand.
16. The kit of claim 8 wherein the top of said container is made from foil or plastic.
17. The kit of claim 8 wherein said container holds between 5 and 50 mL of liquid.

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