The invention relates to an oral hygiene kit, comprising a case having a cover and a storage compartment for housing any or all oral hygiene devices, the case having an aperture or a plurality of apertures to provide ventilation and an outlet for draining trapped liquid inside the case. The oral hygiene devices are restrained and secured at the storage compartment by several means and the kit is made compact for easy handling by making the oral hygiene devices smaller, especially the toothbrush, which minimizes the size of the case holding the kit. One method of making the toothbrush smaller thereby minimizing the size of the case is to provide a toothbrush with uncovered bristles having handles that can be shortened at will. Some examples of restraining and securing means for the oral hygiene devices are a pair of fence, a clip, a secure structure or a hook and loop fastener. The plurality of apertures in the case are in one location or evenly spread out on a bottom surface of the storage compartment or at a top surface of the cover. The case and the secure structure can be made of plastic, blended polymeric material, metal, natural leather, synthetic leather, and wood. The cover of the case can be partially or wholly transparent. A blade made of plastic, wood and metal is fastened into the case for cutting dental flosses.
Fig. 1
Prior Art

Fig. 1A
Prior Art
ORAL HYGIENE KIT

BACKGROUND

[0001] The invention relates to an oral hygiene kit having a ventilated case securing all oral hygiene devices to prevent the formation of molds and growth of bacteria on the devices especially during storage.

[0002] It is important to maintain proper oral hygiene. Brushing one’s teeth is one of the most important parts of a healthy hygiene. To have a healthy smile, the American Dental Association recommends that the teeth should be brushed at least twice daily, preferably after meals. Many who are away from home are unable to brush their teeth after lunch or immediately following an afternoon snack. The longer food particles remain in the mouth, the more susceptible the teeth become to the formation of cavities and decay. While there is a great desire to brush one’s teeth after every meal, often times, people do not brush their teeth because of the bulkiness and inconvenience in always taking along at least a toothbrush and a toothpaste wherever one goes. Further, after brushing one’s teeth, one has to wrap the toothbrush with a piece of absorbent napkin to dry the bristles. Drying the bristles is needed to prevent the growth of molds and bacteria. However, even with the wrapping of the bristles, the problem of mold and bacterial growth is not totally prevented because the napkin stays moist for a while because often times, these are placed in a closed bag for ladies or a closed attache for men. Also, the toothbrushes and the other oral hygiene devices get exposed to the other contents of the bag or attache and the like during storage which hopefully are not harmful to the body in case traces of these get into the bristles of the toothbrush or the tongue scraper, etc. There is no sufficient ventilation provided. Further, the oral hygiene devices, especially some toothbrushes are too long and some toothpastes are too bulky. Great improvements have been made by providing travel size toothbrushes, toothpastes and the like. However, what has been overlooked is the provision of an adequate case to house these devices. Some toothbrushes, especially those for travel have been provided with covers that can be converted to a handle and these covers often times have an aperture to allow the moistened bristles to dry after brushing. While this has solved some problem of portability and ventilation, this has proven to be inadequate because the container for the toothbrush even if they have apertures, still harbor moisture because either there are not enough apertures or they are in the wrong location. Further, the toothbrush will still be kept immediately after brushing in a closed container such as a bag, attache, luggage and the like where the environment is conducive to the formation of molds and bacterial growth. Also, the other oral hygiene devices are kept loose from each other. Toiletry bags have been provided to solve this problem but most of these bags are made of plastic or have been lined with plastic to prevent the moisture from getting out of the bag which worsens the problem of mold formation and bacterial growth instead of helping it.

[0003] It is therefore an object of this invention to provide an oral hygiene kit with a properly ventilated case that can be carried by both men and women alike.

[0004] It is also an object of this invention to provide a kit for all oral hygiene devices that is portable, compact and convenient to carry thereby providing means for people to practice good oral hygiene even when away from home.

[0005] It is a further object of this invention to provide a case that would secure the different oral hygiene devices in place.

[0006] It is a further object of this invention to provide a toothbrush that are more compact than the present travel toothbrushes to minimize the size of the case.

SUMMARY OF THE INVENTION

[0007] The invention relates to an oral hygiene kit, comprising a case having a cover and a storage compartment for housing any or all oral hygiene devices, the case having an aperture or a plurality of apertures to provide ventilation and an outlet for draining trapped liquid inside the case. The oral hygiene devices are restrained and secured at the storage compartment by several means and the kit is made compact for easy handling by making the oral hygiene devices smaller, especially the toothbrush, to minimize the size of the case holding the kit. One method of making the toothbrush smaller thereby minimizing the size of the case is to provide a toothbrush with uncovered bristles having handles that can be shortened at will. Other oral hygiene devices which have been miniaturized into a travel size are suitable as components of the oral hygiene kit herein without the need of further modification. Examples of handles that can be shortened at will are detachable handles, folding handles that unfold from and fold into the toothbrush head for storage and telescopic handles. Folding handles differ from the detachable handle in that the handle is attached to a connector section of a toothbrush head by hinges. Some examples of attaching means for both the detachable and folding handles to the toothbrush head are by a pair of clip on the connector section of the toothbrush head engaging with an opening on the handle and/or a pin at a front end of the connector section of the toothbrush head engaging with a matching opening at the handle. Some examples of restraining and securing means are a pair of fence, a clip, a hook and loop fastener or a secure structure residing inside the storage compartment having a concave surface or surfaces with the concave surface or surfaces shaped to snugly receive a particular oral hygiene device or devices. Some additional restraining and securing means may be added according to the design of the oral hygiene device such as a round hollow post with or without a detachable cap for holding an oral hygiene device rolled in a spool and waterproof and non-absorbent pouches for holding encased oral hygiene devices. The plurality of apertures in the case are in one location or evenly spread out on a bottom surface of the storage compartment or a top surface of the cover. The aperture can have different geometric shape. The case and the secure structure can be made of plastic, blended polymeric material, metal, natural leather, synthetic leather, and wood. The cover of the case can be partially or wholly transparent.

[0008] Other embodiments of the present invention will become readily apparent to those skilled in the art from the following detailed description, wherein it shows and describes only certain embodiments of the invention by way of illustration. As will be realized, the invention is capable of other and different embodiments and its several details are capable of modification in various other respects, all without departing from the spirit and scope of the present invention. Accordingly, the drawings and detailed description are to be regarded as illustrative in nature and not as restrictive.
BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. 1 is a perspective view of a typical oral hygiene kit.

[0010] FIG. 1A is a regular toothbrush with an apertured cover.

[0011] FIG. 2 is a top view of the proposed oral hygiene storage compartment showing the oral hygiene devices attached to the inside bottom surface of the storage compartment.

[0012] FIG. 2A is a blown up illustration of a fence.

[0013] FIG. 2B is a blown up illustration of a clip.

[0014] FIG. 2C is a blown up illustration of a hook and loop fastener.

[0015] FIG. 2D is a blown up illustration of a toothpaste secured by the hook and loop fastener of FIG. 2C.

[0016] FIG. 2E is a perspective view of the proposed secure structure having a concave surface shaped to snugly receive a toothpaste with the secure structure being supported by two legs.

[0017] FIG. 3 is a perspective view of the proposed case having circular apertures for ventilation.

[0018] FIG. 3A is a perspective view of the proposed case having rectangular apertures for ventilation.

[0019] FIG. 4A is a perspective view of a proposed toothbrush with a detachable handle for the oral hygiene kit.

[0020] FIG. 4A-1 is a cross section view showing the clips with the slanted top and the laterally directed hook.

[0021] FIG. 4B is a side view of the toothbrush in FIG. 4A having the handle attached.

[0022] FIG. 4C is a side view showing how the handle of FIG. 4B would rest on the same side as the bristles.

[0023] FIG. 4D is a side view showing how the handle of FIG. 4B would rest underneath the bristles.

[0024] FIG. 4E is a cross sectional side view showing the handles of FIGS. 4A and 4B attached to the clips and pin on the connector section of the toothbrush head.

[0025] FIG. 4F is the top plan view of the toothbrushes of FIGS. 4A and 4B after connection of the handle.

[0026] FIG. 4G is a cross sectional side view of a toothbrush handle secured by a hollow post with a detachable cap.

[0027] FIG. 4H is a side view of a toothbrush with a telescopic handle.

DETAILED DESCRIPTION OF THE INVENTION

[0028] FIG. 1 shows a typical oral hygiene kit 10 suitable for housing oral hygiene devices. FIG. 1A shows a regular toothbrush with an apertured cover. The case 20 comprises a top cover 21 and a bottom storage compartment 22 connected to each other by a hinge 23. The cover 21 and the storage compartment 22 are closed together by a snap latch 24. Other means of connecting and closing the cover with the storage compartment are known. As can be seen, here, the different desired oral hygiene devices or sometimes referred to as oral hygiene pieces are all stored in the most appropriate lay out available. The case, however, does not have any ventilation nor does it have any means to prevent the different oral hygiene pieces from mixing with each other during storage or from getting out of their places which the user has so meticulous figured out before closing the case and stashing it away. The proposed case is similar in structure as the prior art case in that it also has the cover 21, the storage compartment 22 and the means to connect and close the cover and the storage compartment together. However, the proposed case provides ventilation and means to prevent the devices from mixing with each other during storage.

[0029] FIG. 2 is a top view of the proposed storage compartment showing one aspect of the invention. For similar parts, the numbering has been maintained. As shown, the devices herein are restricted from movement by restraining means such as fences, clips or a hook and loop fastener, commonly known by its trademark, VELCRO. These restraining means are collectively identified with the number 25. The fences, showing herein as a pair and the clips are less flexible as fasteners in this application than the hook and loop fastener because the distance between the fences and the clips more or less determines the type of oral hygiene device that can be placed at these location. These fences and clips protrude vertically from the bottom surface 26 of the storage compartment 22. FIG. 2A shows a blown up view of a pair of fence and FIG. 2B shows a blown up view of a typical clip. While the fences are usually made of a rigid material such as plastic or metal, the clips have to be made of a resilient material, such as resilient plastic or metal, to be able to open up while the device is introduced and return to its original position once the device is in place. For a hook and loop fastener, this has to be only of a certain length that can strap any oral hygiene device. The fences and clips can be molded with the case 20 or it can be attached to the case. Several means of attachment are known. There are also different types of clips available. For the hook and loop fasteners, this is usually attached by a suitable adhesive. However, mechanical forms of attachment can also be used. Because of the intent to keep the environment dry, the hook and loop fasteners must be fabricated with a water proof and non-absorbent material. FIG. 2C shows a loose hook and loop fastener while FIG. 2D shows a toothpaste fastened by a hook and loop fastener. For dental flosses rolled in a mini spool or reel, a round hollow post 27 attached to the bottom surface of the storage compartment may be additionally provided to fit into the central tubular opening 28 of the spool as shown in FIG. 2. The round post may be provided with a detachable cap 29 (seen better on FIG. 4G) that snugly fits into the central opening 30 of the hollow post. The cap has a diameter greater than the diameter of the central tubular opening 28 of the spool to prevent the spool from falling or getting out of place. Most спudded dental flosses have built-in cutters but for those without one, a blade 61 is fastened to the case 20. The blade can be made of plastic, wood or metal. For dental flosses that are spooled but case without a central opening, that is solidly encased, this can be secured by a pouch made of non-absorbent and water proof material attached to the case 20. Likewise, there are other several known methods of attaching solidly encased devices. The hygiene devices may also be restrained from movement by adding a secure structure 53 (see FIG. 2E) having a substantially flat surface 60 with concave surface or surfaces 54 conforming to the shapes of different oral hygiene device or devices. The concave surface or surfaces reside within the substantially flat surface. The substantially flat surface of the secure structure is slightly smaller than the surface of the storage compartment so that the secure structure will be snugly fitted into the storage compartment The secure struct-
ture is supported by at least two legs 55. FIG. 2E shows the secure structure with a concave surface conforming to the outer surface of the toothpaste; and the secure structure is supported by two legs. The secure structure may also be supported by four legs (not shown). The two legs have top ends 56 and bottom ends 57. The secure structure have four edges 58. The top ends of the legs are vertically connected to the opposite edges of the secure surface in such a manner that the bottom ends reside on the surface of the storage compartment when placed inside the storage compartment. The secure structure snugly fits into the storage compartment. Alternatively, the four edges of the secure structure may be attached to the four lateral walls of the storage compartment at or about the mid points 59 of the lateral walls in such a manner that the secure structure is parallel or substantially parallel to the surface of the storage compart-

[0030] FIG. 3 shows a proposed case 20 having apertures 32 to provide adequate ventilation and outlet for any liquid entrapped within the case. The apertures may be clumped in one location as shown or it can be evenly spread out throughout the bottom surface 26 of the storage compartment. The apertures may also be introduced at the top surface of the cover 21 rather than the storage compartment 22 or the apertures can be in both surfaces. It is recom-

[0031] Many toothbrushes with a cover 33 often times use the cover to fit into a connector located below the bristles to serve as a handle for the brush to grip on while brushing as shown in FIG. 1. These type of toothbrushes have apertures in the cover so that when the cover is returned back to cover the bristles after brushing, there are apertures to allow water vapors to escape from the toothbrush. However, other toothbrushes maintain the regular length of the handle but have a cap 34 with apertures that cover only the bristles as shown in FIG. 1A. Covering the bristles is really not recommended because some moisture gets trapped inside the covers even in the presence of the apertures. Although the bristles will eventually dry up, the drying process takes longer and in the mean time, molds could have formed and bacteria may have grown. Making the kit more compact can be done by minimizing or making the toothbrush smaller or shorter because this will also in the size of the case. The other oral hygiene devices that come in travel sizes would be good for the compact case without the need of modification. Travel size toothbrushes, some of which are compact, however, is not recommended here because they have a cover for the bristles which are kept exposed during storage. FIGS. 4A, 4B and 4G show a proposed design of a toothbrush with uncovered bristles and examples of handles that could be shortened at will which are par-

The toothbrush shown in FIG. 4A, has a detachable handle 35. This handle detaches and attaches through a pair of clip 36 protruding from a connector section 37 at an end opposite the bristles of the toothbrush head. The top surface 38 of each clip 36 has an oppositely directed slanted top 39 with laterally directed hook 40 to keep the connecting end 41 of the handle 35 in place. FIG. 4A-I shows a cross section view of the clips with the slanted top and the laterally directed hook. Aside from the pair of clips 36, for a sturdier hold, an additional cylindrical pin 42 may be made to protrude from the front side 43 of the connector section 37 with the handle having a matching opening 44 to accommodate the pin as shown in FIG. 4E. The interface of the front side 43 of the connector section may be slanted at an angle as shown in FIG. 4A or may be vertical as shown in FIGS. 4B, 4C, 4D and 4E. The cylindrical pin and matching opening combination may also be used as an attaching means independent of the pair of clip. The handle 35 connects with the clips 36 on the connector section 37 of the toothbrush head through an opening 45a on the handle. FIG. 4F shows the clips 36 engaging on the opening 45a. The inside lateral walls 45 of the opening 45a slides through the sides of the slanted top 39 of the clip 36 and rests on the laterally directed hooks 40. It is recommended to have a resulting smooth matching surfaces around the connector section 37 after the attachment of the handles shown in FIG. 4F. The handle 35 can be detached after use by pinching the pair of clips 36 towards each other to release the lateral walls 45 from the hooks 40. To enable the insertion and release of the handle 35 from the pair of clip 36, the clip should be made of a resilient plastic or metallic material. FIG. 4B is similar to the toothbrush shown in FIG. 4A except that the handle is attached to the connector section 37 by a hinge 62 as shown in FIG. 4B. Several types of hinges can be used. They should be rust proof. The method of attachment of the attached handle through the clips at the connector section 37 of the toothbrush head and the opening 45a on the handle is the same except that with the attached folding handle, the handle is just swung towards the connector section 37 for engagement. This provide the advantage of having one less loose piece to secure on the case and one less piece to lose. In this type of toothbrush, the attached handle is short if it has to fold at the same side as the bristles as shown in FIG. 4C after usage or it can be longer for better grip if the handle folds underneath the bristles as shown in FIG. 4D when not in use. The attachment of the handle and the desired direction of folding has to be synchronized with the location of the bristles as shown in FIGS. 4C and 4D. Other means of attaching the handle are possible such as the implementation of the round hollow post with a detachable cap described for holding the dental floss above. Here, the connector section 37 of the toothbrush head will have the hollow post 27 and the handle 35 will have the matching central opening akin to the opening 28 to fit over or insert into the hollow post. After insertion, the handle will be secured into place by the detachable cap 29 as shown in FIG. 4G. FIG. 4H is a toothbrush with the telescopic handle 46. When not in use, the telescopic handle 46 inserts into a hollow interior connector section 47 below the bristles of the toothbrush head. During usage, one merely pulls the handle down. As in a telescopic form of attachment, the diameter of one end is larger than the diameter of the other end. In this case, the diameter of the handle proximal to the connector section 47 is larger than the diameter at the opposite end 48 of the handle. The telescopic handle should have a length sufficient to allow a portion 49 of the handle 46 to protrude from the connector section 47.
If desired, the end 48 of the handle can have a flanged end 50 for easy operation of the handle as shown in FIG. 4H.

[0032] While all of the different oral hygiene devices were not specifically mentioned or described, it is understood that all of these devices can be accommodated inside the case 20 and can be secured inside the case by different fastening means. Consequently, the size of the case and the number of fasteners will cater to the intended number of oral hygiene devices to be housed. A non-comprehensive list of oral hygiene devices includes toothbrush, toothpaste, tongue scraper, dental floss, dental mirror, dental pick, toothpick and mouthwash. The case 20 and the secure structure 53 can be made of plastic, blended polymeric material, natural leather, synthetic leather or metal. Even wood can be used. The cover or portions thereof may be transparent or clear to allow one to view the interior of the case. The storage compartment 22 have lateral walls 51 having a height taller than the height of the lateral walls 52 of the cover 21 to house more pieces of the devices. The shape of the case, although shown as rectangular, may be shaped differently so long as the aspects of the invention are maintained, namely the apertures for ventilation and the restraining means.

[0033] While the embodiments of the present invention have been described, it should be understood that various changes, adaptations, and modifications may be made therein without departing from the spirit of the invention and the scope of the claims.

I claim:

1. An oral hygiene kit, comprising:
   a case having a cover and a storage compartment for housing any or all oral hygiene devices, the case having an aperture or a plurality of apertures to provide ventilation and an outlet for draining trapped liquid inside the case;
   means for restraining and securing the oral hygiene devices in the storage compartment; and,
   means for compacting the kit of oral hygiene devices to minimize the size of the case.
2. The oral hygiene kit of claim 1 wherein the means for restraining and securing the oral hygiene device is a pair of fence.
3. The oral hygiene kit of claim 2 wherein the fence is made of a rigid material.
4. The oral hygiene kit of claim 1 wherein the means for restraining and securing the oral hygiene device is a clip.
5. The oral hygiene kit of claim 4 wherein the clip is made of a resilient material.
6. The oral hygiene kit of claim 1 wherein the means for restraining and securing the oral hygiene device is a waterproof and non-absorbent hook and loop fastener.
7. The oral hygiene kit of claim 1 further comprising a round hollow post for holding an oral hygiene device rolled in a spool.
8. The oral hygiene kit of claim 1 further comprising a round hollow post having a detachable cap for holding an oral hygiene device rolled in a spool.
9. The oral hygiene kit of claim 1 further comprising waterproof and non-absorbent pouches for holding encased oral hygiene devices.
10. The oral hygiene kit of claim 1 wherein the plurality of apertures are in one location or evenly spread out on a bottom surface of the storage compartment.
11. The oral hygiene kit of claim 1 wherein the plurality of apertures are in one location or evenly spread out at a top surface of the cover.
12. The oral hygiene kit of claim 1 wherein the aperture is of different geometric shape.
13. The oral hygiene kit of claim 1 wherein the means for compacting the kit of oral hygiene devices to minimize the size of the case is providing a toothbrush with uncovered bristles having handles that can be shortened at will.
14. The oral hygiene kit of claim 13 wherein the handle of the toothbrush is detachable.
15. The oral hygiene kit of claim 14 wherein the handle is attached to a toothbrush head by a pair of clip on a connector section of the toothbrush head engaging with an opening on the handle.
16. The oral hygiene kit of claim 14 wherein the handle is attached to a toothbrush head by a pin at a front end of a connector section of the toothbrush head engaging with a matching opening at the handle.
17. The oral hygiene kit of claim 13 wherein the handle of the toothbrush is attached to a connector section of the toothbrush by a hinge to allow the handle to unfold from and fold into a toothbrush head for storage.
18. The oral hygiene kit of claim 13 wherein the handle of the toothbrush is telescopic.
19. The oral hygiene kit of claim 18 wherein the handle of the toothbrush inserts into a hollow interior connector section below the bristles of a toothbrush head when not in use.
20. The oral hygiene kit of claim 1 wherein the case is made of a material selected from the group consisting of plastic, blended polymeric material, metal, natural leather, synthetic leather, and wood.
21. The oral hygiene kit of claim 1 wherein the cover is partially or wholly transparent.
22. The oral hygiene kit of claim 1 wherein the means for restraining and securing the oral hygiene device is a secure structure further comprising a concave surface or surfaces shaped to snugly receive the oral hygiene device or devices.
23. The oral hygiene kit of claim 22 wherein the secure structure further comprises at least two legs; the legs having top ends and bottom ends; the top ends being connected vertically to two opposite edges of the secure structure in such a manner that the bottom ends residing on the bottom surface of the storage compartment when placed inside the storage compartment.
24. The oral hygiene kit of claim 22 wherein the secure structure having four edges attached to four lateral walls of the storage compartment at or about mid points of the four lateral walls in such a manner that the secure structure is parallel or substantially parallel to the bottom surface of the storage compartment.
25. The oral hygiene kit of claim 22 wherein the secure structure is made of a material selected from the group consisting of plastic, blended polymeric material, metal, natural leather, synthetic leather, and wood.
26. The oral hygiene kit in claim 26 wherein the blade is made of a material selected from the group consisting of plastic, wood and metal.

* * * * *