

[54] DENTAL FLOSS HOLDER

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[21] Appl. No.: 414,854

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 316,392, Dec. 18, 1972, abandoned.

[52] U.S. Cl. 132/91

[51] Int. Cl.²..... A61C 15/00

[58] Field of Search 132/91, 90, 92; 32/69

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Primary Examiner—G. E. McNeill
Attorney, Agent, or Firm—Stein & Orman

[57] ABSTRACT

A holding device for a plurality of strands of dental

floss comprising a substantially elongated handle having a head mounted on one end so as to be movable and selectively adjustable by virtue of connecting means which may be in the form of a tongue and socket arrangement or alternately a threaded connector. Adjustment of the head relative to the handle is provided by one or more protrusions on the undersurface of the head dimensioned and positioned relative to a plurality of prearranged indentations on the handle cooperatively positioned with the protrusion. The floss holding means includes a plurality of slots on the outer extremities of the legs or alternately a plurality of grooves thereon such that either two independent, separated strands of floss may be held so as to go in between the grooves of the legs or a loop which defines two strands which may be removably attached to the leg of the head wherein these legs are arranged in spaced relation to one another and inherently biased away from one another due to the flexibility of the material from which they are formed. Alternately, an embodiment may include a head detachably secured to a head base which in turn is movably mounted on a handle wherein the head having the floss means attached thereto may be disposable rather than replacing the floss itself.

7 Claims, 25 Drawing Figures

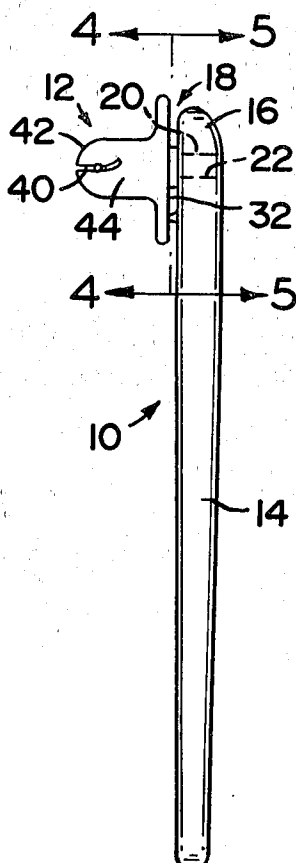


FIG. 1

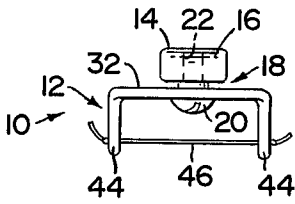


FIG. 4

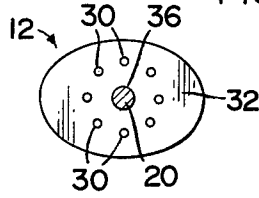


FIG. 5

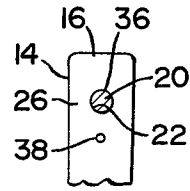


FIG. 2

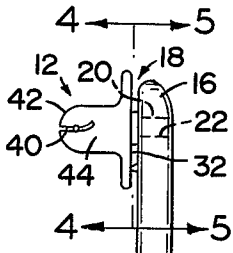
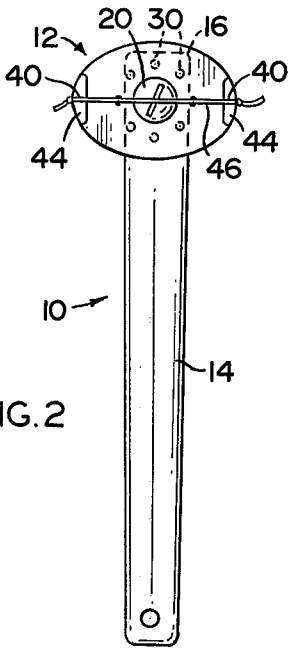


FIG. 3

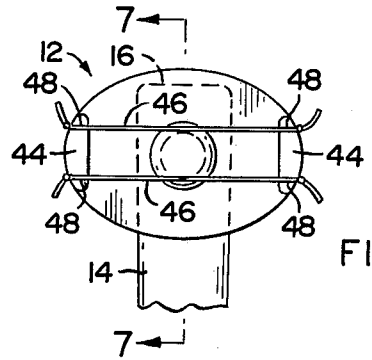


FIG. 6

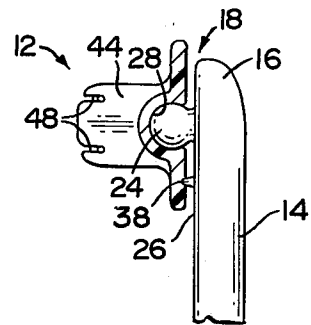


FIG. 7

FIG. 8

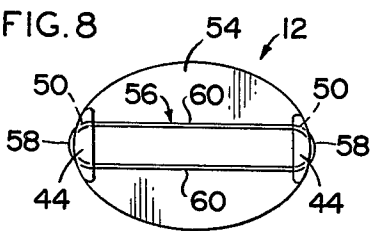


FIG. 10

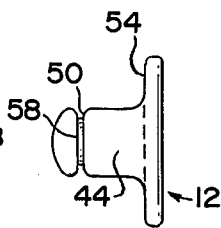


FIG. 9

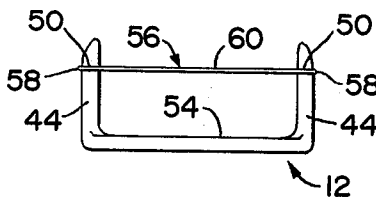
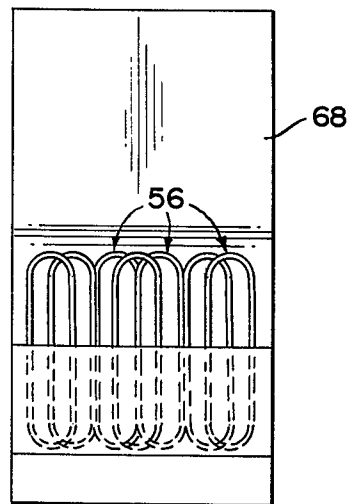


FIG. 9

FIG. 11



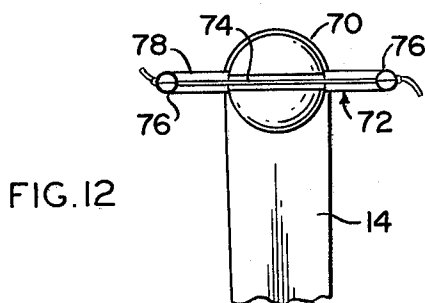


FIG. 12

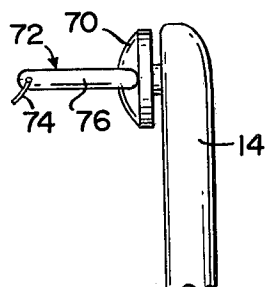


FIG. 13

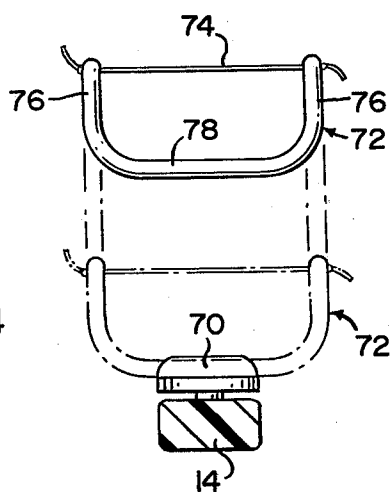


FIG. 14

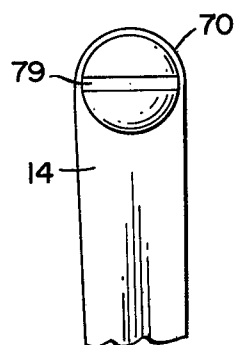


FIG. 15

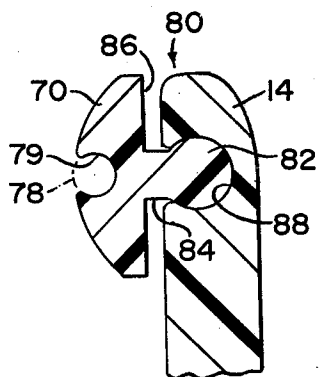


FIG. 16

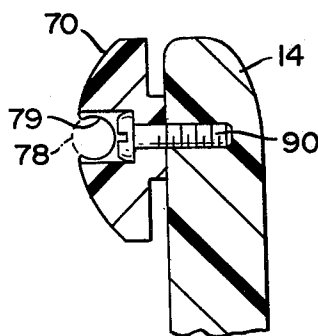
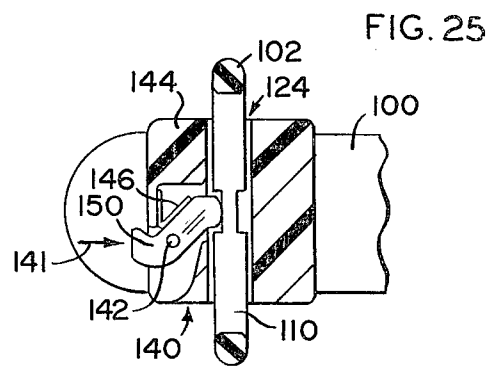
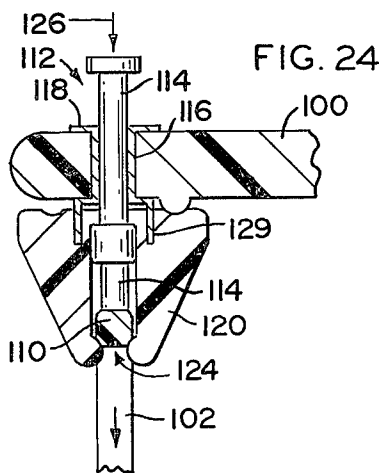
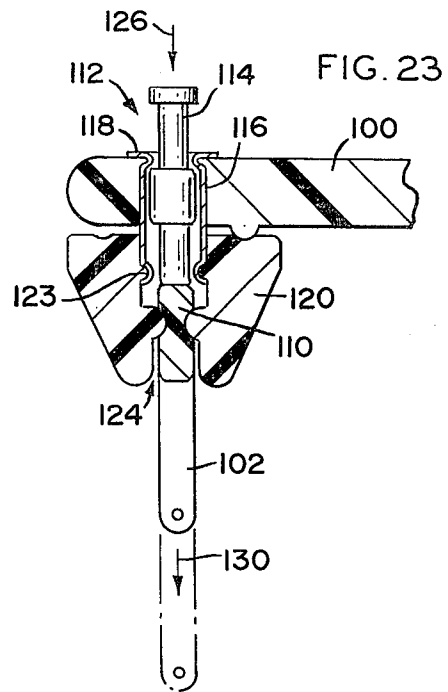
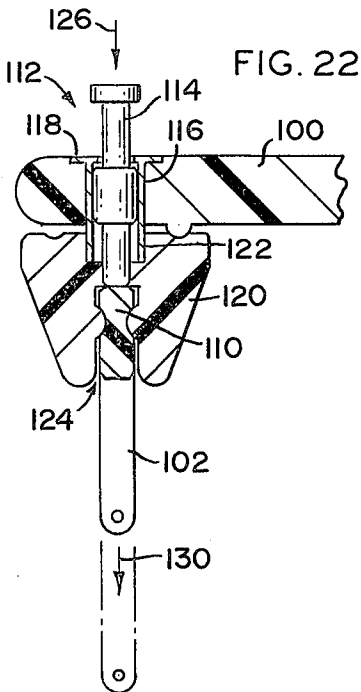
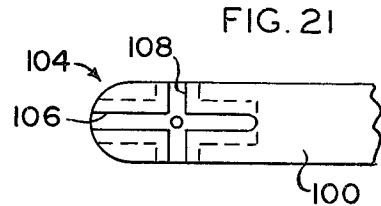
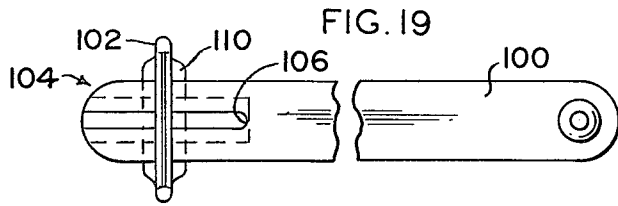
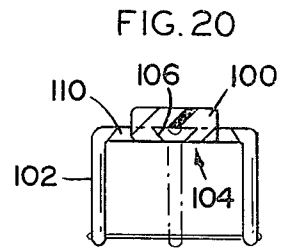
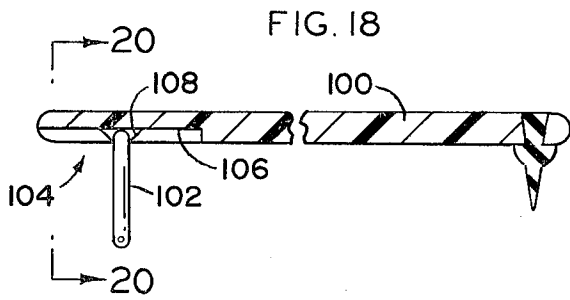


FIG. 17



DENTAL FLOSS HOLDER

This application is a continuation-in-part application of presently co-pending application Ser. No. 316,392, now abandoned filed Dec. 18, 1972, in the name of James B. Zambito.

BACKGROUND OF THE INVENTION

1. Field of the Invention

A dental floss holder of the type to which a number of strands of floss may be removably mounted thereon so as to position and maintain them in cooperative engagement with the teeth of the user when the head and/or the device is placed within the mouth.

2. Description of the Prior Art

It is well recognized in the area of dental hygiene that tooth decay and various disorders of the tooth and gum are caused by particles accumulated between the teeth and about the gum line. While the most common method, other than actual treatment by a dentist, in removing these particles is brushing with a conventional toothbrush. This has been found to be not the most effective. The use of dental floss and the like designed to be positioned between the teeth and to reach areas not readily accessible to the conventional toothbrush has been found to be by far the most effective means of "cleaning" the teeth in respect to the removal of these particles of food.

By far, the most popular method presently available in applying dental floss to the teeth is merely the use of manipulating the single strand of a dental floss by the hands of the user. This is not only relatively unsanitary due to the hands actually entering the mouth, but also is wasteful and generally unappetizing. Waste occurs due to the relatively large amount of floss required to allow the hands of the user to grip the floss firmly enough to place it between the teeth. Similarly, use of the floss often results in the particles being deposited directly on the floss or blood being deposited thereon. These deposits are generally displeasing to both sight and touch and may be one of the main reasons why the use of floss has not become more popularized.

In an attempt to overcome the hand manipulation of floss, a number of "floss holding devices" have appeared in the prior art. The majority of these prior art devices include both a positioning device for the floss combined with a means to have a supply of floss mounted thereon.

A number of these prior art devices are represented in the U.S. Pat. Nos. to Bacon, 380,739; Varre, 618,009; Baumeister, 691,581; Henerlau, 1,417,581; Swope, et al., 1,083,770; and Sorboro 2,837,098.

As can be seen from a review of the structure disclosed in the above cited patents, the prior art attempts to produce an efficient, popular holder has resulted in designs which are generally overly complicated and relatively inefficient due to their unnecessarily complex structure. This has also caused the cost of the devices to be unnecessarily high, both from an initial purchase standpoint and from the standpoint of maintenance and durability. Often times the prior art floss holders are inefficient due to their attempt to combine a floss source with a positioning means such that the user may mount a given supply of dental floss on or in the device and merely remove it from the supply to the area where it is positioned for use. Again, devices of this nature have resulted in generally wasting unnecessary

amounts of floss since the floss which is positioned for use is normally still attached to the supply.

Therefore, there can be seen that there is a great need in the area of dental hygiene for a simple, inexpensive, efficient and popularly acceptable holding device for dental floss which is capable of not only holding a single strand, but also holding a plurality of strands which allows the strands to be positioned on both sides of a tooth at the same time and also giving the device greater versatility in positioning one or more strands relative to the gum line of the user.

SUMMARY OF THE INVENTION

This invention relates to a dental floss holder of the type capable of positioning one or more strands of dental floss, either individually and severally from one another, or wherein the strands are defined by closed loops mounted on the head thereof so as to be easily removed after use.

More particularly, the holding device of the present invention comprises a somewhat elongated handle generally of the size and shape used on conventional toothbrushes. A rotatably or pivotally mounted head is attached at one end of the handle by a head connection means. This connection means may be in the form of a tongue and socket arrangement wherein the tongue protrudes outwardly from one end of the handle. The socket is correspondingly formed and dimensioned within the head and disposed to at least partially enclose the tongue and movable engage the same. Alternately, an aperture may be formed through one end of the handle and a threaded socket may be formed in corresponding position on the undersurface of the head. By virtue of this arrangement, a threaded connector is extended through the aperture and into the threaded socket so as to movably connect the head relative to the end of the handle on which the threaded connector is mounted.

The adjustment means for the head comprises at least one protrusion extending outwardly from the undersurface of the head and positioned and dimensioned to cooperatively engage with a plurality of indentations arranged in a predetermined relation to the surface of the handle in what may be a similar arcuate fashion about the connecting means of the head. This allows the head to be rotated into one of a plurality of positions by merely bringing into engagement the protrusion with one of the indentations or positions.

The head of the holding means may comprise a one piece integrally formed member including a pair of upwardly or outwardly extending legs. The head, and particularly the legs, are made from a relatively flexible material, such as plastic or the like. In addition, the legs are so dimensioned and positioned as to be biased away from one another in a predetermined distance. This bias causes the strand or strands attached to the outer ends of the legs to have a predetermined tension placed thereon so as to maintain the strand in operative relation relative to the teeth of the user when the device is placed in operation.

The floss holding means comprises one or more slots formed on each leg and arranged in substantially aligned relation with the correspondingly positioned slots on the opposite leg. These slots are open ended contiguous to the outer extremity of each leg and arc arranged substantially parallel to the longitudinal axis of that leg. When one slot is formed in each leg, the head is designed to adapt to a single strand of floss

whereby the legs, as discussed above, are spaced a sufficient degree apart and biased relative to one another to maintain proper tension on the strand so as to be operable when placed in the user's mouth.

Alternately, two or more slots may be placed in the upper extremity of each leg such that two or more strands may be placed in side by side relation to one another due to the general alignment of the slots in each leg. Again, the biasing feature of the leg allows the proper tension to be placed on each of the strands so as to be operative within the mouth of the user.

In another embodiment of the present invention, the floss holding means comprises groove means formed adjacent the upper extremity of each leg such that this groove is arcuately formed and at least partially extends along the outer peripheral surface of the upper extremity of each leg.

The grooves are oppositely disposed such that this embodiment of the holding means is specifically adapted to hold a closed end loop or an annulus whereby when extended across the leg, each extremity of the loop engages, or is mounted in the groove of each leg. Regardless of the embodiment of the floss holding means utilized, each of the strands are removably attached so that new strands can be mounted thereon after each individual use.

The invention accordingly comprises an article of manufacture possessing the features, properties and relationship of parts which will be exemplified in the article hereinafter described and the scope of the invention will be indicated in the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawings in which:

FIG. 1 is a top plan view of the assembly of the present invention.

FIG. 2 is a front plan view of the structure shown in FIG. 1.

FIG. 3 is a side view of the structure shown in FIGS. 1 and 2.

FIG. 4 is a sectional view of the rear surface of the head of the structure.

FIG. 5 is a sectional view of the front surface of the upper extremity of the holder or handle means.

FIG. 6 is a cutaway detailed view of one embodiment of the present invention.

FIG. 7 is a detailed sectional view taken along line 7—7 of FIG. 6.

FIG. 8 is a detailed view of yet another embodiment of the head of the present invention.

FIG. 9 is an end view of the structure shown in FIG. 8.

FIG. 10 is a side view of the structure shown in FIG. 8.

FIG. 11 is a package arrangement of a plurality of floss loops particularly adapted to be used on at least one embodiment of the head structure of the present invention.

FIG. 12 is a front plan detailed view of the floss holding head of an alternate embodiment of the present invention.

FIG. 13 is a side view of the embodiment of FIG. 12.

FIG. 14 shows the head detachably secured to a base of the head.

FIG. 15 is a front plan view of the base attached to the handle with the head detached.

FIG. 16 is a sectional view of one means of attaching the base to the handle.

FIG. 17 is a sectional view of an alternate means of attaching the base to the handle.

FIG. 18 is a sectional view showing yet another embodiment of the present invention with the head attached thereto.

FIG. 19 is a top view of the embodiment shown in FIG. 18.

FIG. 20 is a sectional view taken along line 20—20 of FIG. 18.

FIG. 21 is a partial top view showing the connecting means of the disclosed embodiment of the present invention.

FIG. 22 is a detailed sectional view showing yet another embodiment of the present invention including the detachment means.

FIG. 23 is another embodiment similar to that shown in FIG. 22.

FIG. 24 is a sectional view of yet another embodiment of the present invention showing means of detachably securing the head to the base.

FIG. 25 is yet another embodiment of the present invention showing means of detachably securing the head to the base.

Similar reference characters refer to similar parts throughout the several views of the drawings.

DETAILED DESCRIPTION

This invention relates to a dental floss holder generally indicated as 10, FIGS. 2 and 3 including a floss holding head 12 pivotally mounted on an essentially elongated handle means 14. More particularly, as shown in FIG. 1, a connecting means serves to mount head 12 in a rotatable or pivotal manner about extremity 16 of handle 14. The connecting means generally indicated as 18 may comprise a conventional screw threaded fastener 20 secured within threaded socket 22 in the conventional manner. Another tongue member 24 extends outwardly from surface 26 of handle 14. This tongue may be formed into a spherical or ball-like configuration and be correspondingly shaped to mate with socket 28 integrally formed within head 12. Accordingly, the socket and tongue arrangement forms the conventional ball and socket mating assembly wherein the head 12 is allowed to rotate about the spherically shaped tongue 24 due to their corresponding configurations.

Turning to FIGS. 3, 4, 5 and 7, it is shown that the head 12 may be selectively adjusted into a plurality of desired positions relative to the handle 14 by an adjustment means. This adjustment means may comprise a plurality of indentations 30 formed in a substantially circular configuration in surface 32 on the rear of base 33 integrally formed to head 12. This circular configuration is arranged substantially concentric to the base 36 of either the connector 20 or the tongue member 24 dependent upon which embodiment of the connecting means is used. Turning to FIG. 5, the adjustment means further comprises at least one protrusion 38 extending outwardly from surface 26 of the handle 14 and positioned in predetermined spaced relation to base 36 so as to mate with any of the plurality of indentations 30 formed on surface 32 of the head 12. Adjustment of the head, therefore, comprises the selective movement of the head to the desired position and engaging the pro-

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trusion 38 with the closest indentation 30 relative thereto. The depth of the indentation and the length of the protrusion is sufficient enough to maintain the head in substantially locked position relative to the handle 14 so to prevent rotation of the head during use of the floss within the mouth of the user.

Separate embodiments of the floss holding means are represented in FIGS. 3, 6 and 8. In the embodiments shown in FIG. 3, the floss holding means comprises at least one slot 40 formed contiguous to the extremity 42 of each leg 44 integrally formed on head 12. In that the head and the legs themselves are made from an inherently flexible material, the legs are configured and dimensioned so as to provide a spring action against the extremities of the strand 46 thereby making it taut when applied in slot 40.

FIG. 6 shows another embodiment of the present invention wherein a plurality of strands 46 are mounted on head 12 due to the fact that the adjustment means comprises a plurality of slots 48 formed in each leg 44 of head 12. It should be pointed out that the correspondingly positioned slots 48 in each of the legs 44 are substantially aligned such that the strands 46 are arranged in generally parallel relation to one another as clearly shown in FIG. 6.

The embodiment of FIG. 8 shows the adjustment means comprising a groove means 50 formed in each leg 44 in a plane substantially parallel to the upper surface 54 of head 12. The groove means 50 are also substantially aligned relative to one another by being positioned an equal distance surface 54. Again, in this embodiment, a loop of dental floss 56 is utilized wherein the loop is continuous so as to form "closed" extremities 58 which are designed to fit within grooves 50 as shown in FIGS. 8 and 9. The loop 56 defines a pair of strands 60 as shown.

With this embodiment, a plurality of the loops 56 may be purchased separately or along with the holder itself and may be packaged in any conventional packaging arrangement 68. In this embodiment, the legs 44 are also normally biased away from one another so as to render the strands 60 taut for more efficient use within the mouth of the user.

Referring to FIGS. 12 through 17, an alternate embodiment of the present invention comprises handle means 14 having an interconnecting leg 78 of head 72 attached thereto by means which will be described in detail hereinafter with specific reference to FIGS. 16 and 17. The head itself 72 may be shaped in a substantially U-shaped configuration and have a floss means 74 attached to opposite extremities of the fingers 76 formed on head 72 and arranged in spaced apart relation to one another. As described above, these fingers 76 may be normally biased away from one another so as to apply proper tension to the floss means 74 connected as shown. The interconnecting leg 78 of the head is specifically configured to frictionally engage base 70 and more specifically to be detachably mounted within indentation means 79 formed across the base 70 as shown in FIG. 15. Referring again to FIG. 14, the specific configuration and dimension of the indentation means 79 and the leg 78 are such that the head may be removably mounted within indentation means 79 and the construction of the head is such as to allow the head to be disposable. This eliminates the need to constantly add floss means 74 to fingers 76 as in the embodiment previously described.

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Referring to FIGS. 16 and 17, an attachment means of this embodiment of the present invention may comprise a ball and socket assembly generally indicated as 80 comprising ball means 82 integrally formed as part of a protrusion 84 extending outwardly from the rear surface 86 of the base of the head 70. A socket means 88 is specifically configured to correspond to the dimension of the ball 82 thereby allowing the ball member 82 to fit securely therein. The dimensions of the ball and corresponding socket are such as to allow relative movement between base 70 and handle 14 and more specifically may even allow detachment of the base 70 from 14 thereby again allowing the head to be disposable. In this particular embodiment, the head 72 and more specifically the leg 78 may be securely or permanently attached to base 70 so that disposal of the head is allowed by detachment of the base from the handle.

An alternate embodiment of the connecting means comprises a connector element which may be in the form of a threaded fastener 90 passing through base 70 and securely engaging the upper portion of handle 14 as shown. In this embodiment, the leg 78 may securely fit within indentation means 79 so as to be detachably mounted therein and in this way allows the head itself to be detachable. The attachment of the element 90 to the base 70 is such as to allow relative movement between the base 70 and handle 14. This provides adequate placement of the base and more specifically the floss 74 when in use.

Turning the FIGS. 18 through 21, another embodiment of the present invention comprises handle 100 having attached thereto head 102 by means of connecting means generally indicated as 104 which comprise a plurality of channels, at least two of which 106 and 108 are arranged in transverse relation to one another. The interconnecting leg 110 is so configured and dimensioned to fit within either of the grooves 106 and 108 in frictional engagement therewith. By virtue of this engagement the leg 110 and the head 102 may be oriented in parallel relation to the longitudinal axis of the particular channel 106 or 108 in which it is mounted. It is obvious that the orientation of the head relative to the handle is advantageous to reach all of the various positions of the teeth within the mouth of the user.

Referring to FIGS. 22, 23 and 24, the embodiment of the subject invention includes handle 100 including an attachment means generally indicated as 112 and including a plunger means 114 at least partially mounted within sleeve 116 which itself may be affixed to handle 100 by flanges 118 securely attached to the handle as shown in FIGS. 22, 23 and 24.

Turning first to FIG. 22, the plunger 114 may extend down through base 120 wherein the portion 122 of sleeve 116 frictionally engages base 120 and may be removably attached thereto. Similarly, interconnecting leg 110 of head 112 may fit within indentation means 124 and be frictionally engaged therein. When the sleeve portion 122 is detachably connected to base 120, activation of the plunger in the downward direction in accordance with the directional arrow 126 causes a dislodging of the base 120 from the handle 100 and from the sleeve 122 or alternately, dependent upon the specific amount of force with which base 120 engages the portion 122 of sleeve 116, only the head 102 may be dislodged as indicated by directional arrow 130.

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Turning to FIG. 23, the portion 123 of sleeve 116 is fixedly attached to base 120 so as to allow plunger 114 to engage the interconnecting leg 110 of head 102 and thereby dislodge it from between the indentation means generally indicated as 124. By virtue of this detachment means, either the head or the base, depending upon the particular embodiment of the invention utilized, may be detachable from the handle.

FIG. 24 shows yet another embodiment of the present invention wherein the portion 129 of sleeve 116 is attached in the manner shown to base 120 thereby allowing relative movement, as in all the embodiments shown in FIGS. 22 and 23, between base 120 and handle 100 while at the same time permitting movement of plunger 114 in the direction indicated by directional arrow 126 causing dislodgement of the head 102 upon engagement of the plunger 114 with leg 110.

FIG. 25 relates to yet another embodiment of the present invention wherein a locking means generally indicated as 140 is pivotally connected at 142 to base 144. Indentation means generally indicated as 124 is correspondingly dimensioned and configured to have interconnecting leg 110 mounted therein. Pressure applied to the locking means 140 as indicated by directional arrow 141 in the manner shown causes a pivotal movement of the locking means against a bias means 146 interposed between predetermined portions of base 144 and lever element 150 which is included as part of the locking means 140. As can be readily seen, movement of lever means 150 causes dislodgement of head 102 and in particular interconnecting leg 110 from the indentation means 24 and of course detachment of this head from base 144.

It will thus be seen that the objects set forth above, among those made apparent from the preceding description, are efficiently attained and, since certain changes may be made in the above product without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

Now that the invention has been described,

What is claimed is:

1. A dental floss holder comprising: a handle, a floss holding head attached to said handle, connecting means attached to said handle, both said head and said connecting means being dimensioned and configured to be detachably connected to one another, said head comprising a plurality of legs disposed in spaced relation to one another, whereby floss means is position-

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able between said legs; base means comprising indentation means formed thereon and dimensioned and configured to frictionally and removably engage said head, attachment means interconnected between said base and said handle and disposed to movably connect said head to said handle, said attachment means comprising detachment means including a plunger means movably mounted on said handle and positionable into engagement with said head, whereby said head may be dislodged from said indentation means within said base means.

2. A dental floss holder as in claim 1 wherein said detachment means comprises a sleeve interconnected between said base and said handle means and at least partially housing said plunger means.

3. A dental floss holder as in claim 1 further comprising locking means pivotally attached to said base and disposed to engage a predetermined portion of said head, said removably secured in said indentation means and movable relative thereto upon activation of said lock means, whereby said head may be removed from said base upon activation of said lock means.

4. A dental floss holder as in claim 2 wherein said sleeve is fixedly secured to both said handle and said base, whereby said head is detachable from said handle upon activation of said plunger.

5. A dental floss holder as in claim 2 wherein said sleeve is fixedly secured to said handle and removably secured to said base, whereby said head and said base are detachable from said handle upon activation of said plunger.

6. A dental floss holder comprising: a handle, a floss holding head attached to said handle, connecting means attached to said handle, both said head and said connecting means being dimensioned and configured to be detachably connected to one another, said head comprising a plurality of legs disposed in spaced relation to one another, whereby floss means is positionable between said legs, said connecting means comprising groove means including at least one groove integrally formed in said handle means, at least one of said plurality of legs being correspondingly configured and dimensioned proportionally larger relative to said one groove, said one leg being frictionally engaged within said groove so as to be detachable therefrom, whereby said head is disposable from said handle after use.

7. A dental floss holder as in claim 6 wherein said groove means comprises a plurality of grooves, at least two of said grooves arranged in transverse relation to one another and integrally formed in said handle means, whereby engagement of said head and one of said two grooves defines the orientation of said head relative to said handle.

* * * * *

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,927,686 Dated December 23, 1975
Inventor(s) James B. Zambito

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 1, line 52, "1,417,581" should read -- 1,417,518 --.

Column 2, line 30, "movable" should read -- movably --.

Column 5, line 5, "so to" should read -- so as to --.

Signed and Sealed this

Fifth Day of October 1976

[SEAL]

Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents and Trademarks