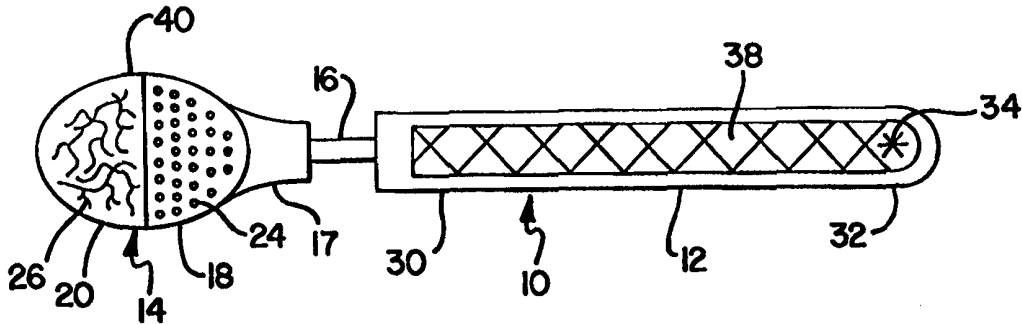




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁶ : A46B 9/04, 9/06, A61B 17/24, A46B 5/00</p>	<p>A1</p>	<p>(11) International Publication Number: WO 99/33374 (43) International Publication Date: 8 July 1999 (08.07.99)</p>
<p>(21) International Application Number: PCT/US98/27315 (22) International Filing Date: 21 December 1998 (21.12.98) (30) Priority Data: 09/001,761 31 December 1997 (31.12.97) US 09/069,918 30 April 1998 (30.04.98) US (71) Applicant: AMTEC PRODUCTS, INC. [US/US]; 1238 Western Avenue, Flossmor, IL 60422 (US). (72) Inventor: RIMKUS, Ronald; 1238 Western Avenue, Flossmor, IL 60422 (US). (74) Agents: MORNEAULT, Monique, A. et al.; Wallenstein & Wagner, Ltd., 53rd floor, 311 South Wacker Drive, Chicago, IL 60606-6622 (US).</p>	<p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>With international search report.</i></p>	

(54) Title: IMPROVED ORAL CLEANING APPARATUS



(57) Abstract

A disposable oral cleaning apparatus (10) for cleaning and removing particles and bacteria from the upper surface of the tongue, including an elongated handle (12), a head component (14) and a flexible connector (16) connecting the elongated handle and the head component. The elongated handle may also include a solution storage cavity, and an attachment utensil partially stored in the cavity. The head component has a pre-cleaning portion, a cleaning portion (24) and an absorbent portion to provide an initial cleaning of the coating of the tongue, a secondary deep cleansing of the pores of the tongue, and a final absorption and removal of all debris. The oral cleaning apparatus is adapted to promote proper cleansing of the tongue so as to eliminate oral bacteria and bad breath and promote proper oral hygiene.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece			TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	NZ	New Zealand		
CM	Cameroon		Republic of Korea	PL	Poland		
CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakstan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

IMPROVED ORAL CLEANING APPARATUS

DESCRIPTION

Technical Field

The present invention relates generally to an oral cleaning apparatus for cleaning and medicating the surface of the tongue.

Background of the Invention

5 Generally, brushing, flossing and rinsing with mouthwash have been the standard methods utilized to eliminate oral bacteria and bad breath. According to studies, however, bacteria on the surface of the tongue can cause up to 75% of bad breath odor. As such, numerous devices have been conceived to try to remove bacterial growth on the surface of the tongue. Prior attempts to provide a means
10 for cleaning the tongue generally fall into two categories; scraper-style cleaners and brush-style cleaners.

Scraper-style tongue cleaners are disclosed in U.S. Patent Nos. 5,438,726, 5,282,814, 5,005,246, 2,218,072 and 1,983,601. Scraper-style tongue cleaners are also disclosed in U.S. Design Patents Nos. Des. 367,707 and Des.
15 285,342.

U.S. Patent No. 5,438,726 discloses a toothbrush having interchangeable periodontal devices, one being a concave tongue scraper. The tongue scraper is comprised of a single rigid blade.

U.S. Patent No. 5,282,814 discloses an instrument for cleaning the top
20 of the tongue. The instrument comprises a blade having a sharp, scraping edge to scrape any coating or other debris from the top of the tongue. The blade is connected to one or two rigid arms. This instrument, however, like the one disclosed in U.S. Patent No. 5,438,726, only has a single rigid blade to scrape away debris. As such, these devices do not allow for variations in the

topographical surface of the tongue. Additionally, the rigid arm makes it difficult to administer an appropriate amount of pressure on the tongue.

U.S. Patent No. 5,005,246 discloses a toothbrush having a tongue scaler slidably supported within the handle. The tongue scaler is used to remove the fur from the lingual body by bending the tongue scaler into a curved
5 configuration and applying a reciprocating motion. Similar to the patents disclosed above, U.S. Patent No. 5,005,246 discloses a single rigid blade to scrape away debris. This blade must be bent to fit within the mouth opening, making it difficult for the user to manipulate.

U.S. Patent No. 1,983,601 discloses a device adapted for use either or
10 both as a scraping cleanser and distributor of medicinal or antiseptic solutions. The device employs a scraper and distribution head, a hollow handle, and a rubber bulb or ball having an extension. Solution for distribution is stored in the ball. When the ball is compressed, the solution is forced from the ball and through the
15 extension to the distribution head. The distribution head has ports which allow the solution to be distributed from the device during scraping use. Additionally, by compressing and permitting expansion of the ball during the scraping operation, the surface being treated is thoroughly scraped by the scraping surfaces of the head and simultaneously cleansed by the suction created by manipulation of the bulb.
20 The suction is created by the permitted expansion of the ball following compression.

U.S. Design Patents Nos. Des. 367,707 and Des. 285,342 disclose tongue cleaners/scrapers that are shaped similar to a common disposable razor. Each has a rigid handle with a single rigid blade. As such, both designs have the
25 same drawbacks of the above-mentioned patents.

Brush-style tongue cleaners are disclosed in U.S. Patent Nos. 5,613,262, 5,226,197, 4,079,478, 3,943,592 and 2,491,274. U.S. Patent No.

5,613,262 discloses a device for cleaning the surface of the tongue comprising an elongated handle having a brushhead attached to one end thereof. The handle has a slight angle. The handle, however, is rigid and does not allow for a variable pressure to be exerted on the tongue. Further, the brush head has a substantially flat surface and merely acts to brush food and debris from the surface of the tongue, similar to a toothbrush.

U.S. Patent No. 5,226,197 discloses a tongue cleaning brush/scrapper having a semi-rigid scraper and a plurality of short bristles. Like the above-mentioned scrapper-style cleaners, this device only utilizes a single scraper. Further, the entire device is flat making it difficult for the user to properly clean the entire surface of the tongue.

U.S. Patent No. 4,079,478 discloses a tongue brush. The brush, however, is large and cumbersome. Furthermore, the handle is larger yet, and awkward to maneuver. As such, this device may promote gagging and would, therefore, likely be ineffective.

U.S. Patent No. 3,943,592 discloses a tongue cleaning device. This device is comprised of a VELCRO hook material attached to a flat member. However, this device only contains a single cleaning area. Also, like the devices described above, this device has the same deficiency in that it employs a flat-rigid handle.

U.S. Patent No. 2,491,274 discloses a tongue cleaning device for cleaning the taste buds of the tongue and for the application of mouth wash. The device is comprised of a cleaning sponge which is of a porous-resilient nature and is preferably formed of a single piece of rubber. The handle is a single rigid piece.

The above-described prior oral cleaning devices do not provide a means for collecting any saliva, food particles and bacteria that may be removed from the tongue during use of the apparatus. Thus, use of the above-described

prior devices can be quite messy. Accordingly, the above-described prior devices can usually be used only in limited circumstances and environments. In many instances, the prior devices are large, bulky and expensive to manufacture. The present invention is designed to solve these and other problems by providing a portable, disposable (either completely or partially) oral cleaning apparatus having an absorbent pad to catch saliva, food particles and bacteria as they are removed from the tongue, along with a solution storage cavity and utensil for application of the solution.

Summary of the Invention

Generally, the present invention provides an oral cleaning apparatus for cleaning and removing particles from the surface of the tongue, and for housing an oral hygiene solution and an applicator therefor. The oral cleaning apparatus is comprised of an elongated handle, a head component, and an inter-dental solution utensil with applicator.

The elongated handle has a proximal end and a distal end. The elongated handle may also have a cavity adjacent the distal end. Further, the elongated handle may include a roughened surface for gripping the apparatus and an interproximal brush adjacent the distal end of the handle.

The inter-dental solution utensil is a separate and detachable cleaning/applicating utensil. The utensil has a brush portion and a cap portion. The brush portion is stored in the cavity of the handle. The cap portion mates with the distal end of the handle and seals the cavity such that solution cannot escape when the cap is attached to the handle. The utensil may be used as a between-the-teeth cleaning utensil.

The head component is adjacent the proximal end of the handle. The head component has a first side and a second side. The head component further has a first section and a second section. Optionally, the head component may have

a third section. The first section is generally comprised of a pre-cleaning portion; the second section is generally comprised of a cleaning portion; and, the third section is generally comprised of an absorbent portion. The first, second and third sections may either be located on the first side or second side of the head component. Additionally, the first, second and third sections may be located on both the first and second sides of the head component. In one embodiment the head component has multiple arcuate segments. In another embodiment, the head component has a convex first side and a convex second side.

In another embodiment a flexible connector connects the head component and the handle. As such, the flexible connector is generally located between the proximal end of the handle and the head component. The flexible connector enables the user to control the pressure exerted on the surface of the tongue by the apparatus.

In a first aspect of the present invention there is provided an oral cleaning apparatus which removes food particles and bacteria from the upper surface of the tongue by proffering an initial cleaning of the coating of the tongue, a secondary deep cleansing of the pores of the tongue, and a final absorption and removal of all debris.

In another aspect of the present invention there is provided an oral cleaning apparatus having a cavity for storage of a solution, gel, or paste.

In yet another aspect of the present invention there is provided an oral cleaning apparatus which provides a utensil for medicating surfaces of the mouth.

In an additional aspect of the present invention there is provided an oral cleaning apparatus which is designed to promote proper cleansing of the upper surface of the tongue while precluding a gag reflex.

In a further aspect of the present invention there is provided an oral cleaning apparatus which can be easily and inexpensively manufactured such that

portions of the apparatus, or the entire apparatus, may be disposable. Thus, the apparatus will be generally available to the entire public for use to improve oral hygiene.

Other features and advantages of the invention will be apparent from the following specification taken in conjunction with the following drawings.

Brief Description of the Drawings

In order that the present invention may be understood, it will now be described by way of example, with reference to the following drawings.

FIG. 1 is a plan view of an underside of an oral cleaning apparatus according to one embodiment of the present invention;

FIG. 2 is a side elevation view of the oral cleaning apparatus illustrated in FIG. 1;

FIGS. 3A-3C are side elevation views of cleaning projections according to several embodiments of the present invention;

FIG. 4A is a top plan view of cleaning projections illustrated in FIG. 3A;

FIG. 4B is a top plan view of cleaning projections illustrated in FIG. 3B;

FIG. 4C is a top plan view of cleaning projections illustrated in FIG. 3C;

FIG. 5 is a plan view of an underside of an oral cleaning apparatus according to a second embodiment of the present invention;

FIG. 6 is a plan view of an underside of an oral cleaning apparatus according to a third embodiment of the present invention;

FIG. 7 is a side elevation view of the oral cleaning apparatus illustrated in FIG. 6;

FIG. 8 is a elevation view of a utensil utilized with the oral cleaning apparatus illustrated in FIGS. 6 and 7;

FIG. 9 is a perspective view of an oral cleaning apparatus according to a fourth embodiment of the present invention;

FIG. 10 is a side elevation view of an oral cleaning apparatus according to a fifth embodiment of the present invention;

FIG. 11 is a perspective view of an oral cleaning apparatus according to a sixth embodiment of the present invention;

5 FIG. 12 is a plan view of an underside of an oral cleaning apparatus according to one embodiment of the present invention;

FIG. 13 is a cutout view along line 13-13 of the oral cleaning apparatus of FIG. 12;

10 FIGS. 14A and 14B are elevation views of an attachment utilized with the oral cleaning apparatus illustrated in FIG. 12.

Detailed Description of the Preferred Embodiments

15 While this invention is susceptible of embodiments in many different forms, there is shown in the drawings and will herein be described in detail preferred embodiments of the invention with the understanding that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the broad aspect of the invention to the embodiments illustrated.

20 Referring now in detail to the drawings and initially to FIGS. 1 and 2, there is shown a preferred embodiment of the oral cleaning apparatus 10 constructed in accordance with the present invention. The oral cleaning apparatus 10 preferably comprises an elongated handle 12, a head component 14, and a flexible connector 16 between the elongated handle 12 and the head component 14. The head component 14 illustrated in FIG. 1 has a first section 18 and a second section 20. The first section 18 is comprised of a cleaning portion 24 and the second section 20 is comprised of an absorbent portion 26. In operation, the head component 14, with
25 cleaning and absorbent portions 24,26, is moved along the surface of the tongue, applying a slight downward pressure on the handle 12, in a posterior to anterior stroking motion. As the head 14 is moved along the surface of the tongue, the

cleaning portion 24 removes the coating on the tongue including food particles and certain bacteria, while the absorbent portion 26 captures and carries away the removed coating (including food particles and certain bacteria), and provides a deep cleansing of the entire topography, including pores, of the tongue.

5 The elongated handle 12 is generally a rigid member and has a proximal end 30 and a distal end 32. Preferably, the handle 12 is made from a plastic material. Most preferably, the handle 12 is made from a medical grade plastic. An interproximal brush 34 extends from the distal end 32 of the handle 12. In the embodiment shown in FIG. 1, the interproximal brush 34 extends perpendicularly
10 upward from the top surface 36 of the handle 12 and operates as an interdental cleaning device. The interproximal brush 34 is preferably formed from a plurality of bristles or molded plastic (e.g., nylon). In this embodiment, the interproximal brush 34 is permanently fixed to, and integral with, the handle 12. As is also represented in FIG. 1, the elongated handle 12 has a roughened surface or knurled area 38 on its top
15 and bottom surfaces 36,38. The roughened surfaces 36,38 improve the ability to grip the apparatus 10 so that it does not slip in the user's hand. Preferably, the roughened surfaces 36,38 are molded directly into the handle 12 during manufacture of the handle 12.

 The flexible connector 16 extends from the proximal end 30 of the handle
20 12 and connects a neck portion 17 of the head component 14 to the handle 12. The connector 16 is preferably made from a plastic strip, however, the connector 16 may also be made from a flexible metal or other flexible material. Further, the flexible connector 16 may be integral with the handle 12, the neck portion 17 of the head component 14, or both the handle 12 and the neck portion 17 of the head component
25 14. The connector 16 operates as a leaf spring or shock absorber between the handle 12 and the head component 14. As such, the flexible connector 16 provides a means for controlling the pressure exerted on the surface of the tongue. As the user pushes

the handle 12 downward on the tongue with increased force, the flexible connector 16 bends or deforms resulting in a constant pressure on the tongue so as not to cause damage to the tongue. Additionally, the flexible connector 16 allows the head 14 to float on, and conform to, the topographical variations of the surface of the tongue.

5 Accordingly, a larger portion of the head component 14 of the apparatus 10 maintains constant contact with the surface of the tongue as compared to prior apparatuses employing a single rigid scraping member.

As illustrated in the embodiment of FIG. 1, the head component 14 is connected to the flexible connector 16 via neck portion 17. The head component 14 10 comprises a circular or oval portion 40 and the neck portion 17 as seen in FIG. 1. As best displayed from the side view of FIG. 2, the head component 14 has arcuate segments 44,46 connecting an angular portion 48. The head component 14 further has a first side 50, a second side 52, a first section 18 comprised of a cleaning portion 24, and a second section 20 comprised of an absorbent portion 26.

15 The cleaning portion 24 initially removes the coating on the surface of the tongue and provides a deep and thorough cleansing of the entire surface topography, including pores, of the tongue. In a preferred embodiment the cleaning portion 26 is comprised of a plurality of projections or cleaning fingers 54. The cleaning fingers or 20 projections 54 are semi-rigid members which extend outwardly with respect to the first side 50 of the head 14. The projections 54 may be made of a VELCRO hook material as shown in FIG 1, or of a molded plastic (not shown). The projections 54 may also include individual T-shaped projections 56 as shown in FIGS. 3A and 4A, individual rectangularly-shaped or square-shaped vertical members 58 as shown in 25 FIGS. 3B and 4B, and individual cylindrically-shaped projections 60 as shown in FIGS. 3C and 4C. Each of the above-described projections 54 can be integral with, and possibly molded from the same material as that which comprises the head component 12. Alternatively, the projections 54 may be a separate element affixed to

the second section 20 of the head component 14. As is shown in FIGS. 3 and 4, the projections 54 can be positioned in a plurality of rows in the second section 20. All projections 54, no matter what the style, are independently and individually movable. When the projections 54 contact the surface of the tongue, they individually scrape the surface, moving back and forth according to the applied tangential and radial forces on the apparatus 10.

The absorbent portion 26 may be formed from a cellular, sponge-like material (e.g., reticulated polyurethane) or any other relatively soft, absorbent material (e.g., gauze, cotton, or the like).

In the embodiment shown in FIGS. 1 and 2, the first and second sections 18,20 are located on the first side 50 of the head 14. As such, the first side 50 is the side that is moved along the upper surface of the tongue to remove all debris from the upper surface of the tongue. Because the head 14 has flat, angled and arcuate sections, and both pre-cleaning and cleaning portions, the user can vary the cleaning from a minimum to maximum by raising or lowering the handle 12 with respect to the tongue accordingly.

Once the user has performed an appropriate number of cleaning strokes on the upper surface of the tongue, the head component 14 can be rinsed with hot water to remove the debris and prepare the apparatus 10 for the next usage. If the surface of the tongue is excessively soiled, a rinsing operation may be performed once or more between cleaning strokes. The oral cleaning apparatus 10 can be used numerous times before deterioration of the cleaning components 24,26 requires disposal of the apparatus 10.

Referring now to FIG. 5, in a second embodiment of the oral cleaning apparatus 10a of the present invention, the head component 14a is comprised of a first section 18a, a second section 20a, and a third section 22a. The first section 18a, immediately adjacent the neck portion 17a of the head 14a includes a pre-cleaning

portion 24a comprised of a semi-abrasive material (e.g., wool or materials having a plurality of loops). One such material having a plurality of loops is a VELCRO loop material sold by the Velcro Corporation. The second section 18a is identical to and may be comprised of the same materials as the cleaning portion 26 of the embodiment illustrated in FIGS. 1 and 2. The third section 22a of the head component 14a comprises an absorbent portion 28a. The absorbent portion 28a is generally comprised of a soft pad or sponge which is attached to the third section 22a of the head component 14a. The absorbent portion 28a can also be comprised of a gauze material, reticulated polyurethane, cotton, or materials having a plurality of loops like the pre-cleaning portion 24. The absorbent portion 28a operates as a final pad to generally captivate debris, particles and bacteria which have been loosened from the surface of the tongue by the first and second sections 18a,20a, i.e., the pre-cleaning and cleaning portions 24a,26a of the head component 14a. Once captivated, the absorbent portion 28a carries the debris away. Similar to the pre-cleaning portion 24a and cleaning portion 26a, the absorbent portion 28a can be rinsed to remove all debris from the pad 28a. Additionally, the absorbent portion 28a can be saturated in a medication, antiseptic or other cleansing solution and utilized as an applicator to apply solutions to the tongue's upper surface.

With reference to FIGS. 6 and 7, in a third embodiment of the present invention, the oral cleaning apparatus 10b has a modified handle 12b. The handle 12b is modified to include a storage cavity 62b. The storage cavity 62b is a hollowed out portion of the handle 12b which is capable of removably retaining a dental hygiene utensil 64b (e.g., a pick, brush or gum massager formed from semi-firm nylon or rubber). A typical dental hygiene utensil 64b is illustrated in FIG. 8 and comprised of a brush 66b connected to an extension 68b. The brush 66b is similar in design and application to the interproximal brush 34 of the first embodiment of FIG. 1. This utensil 64b, however, unlike brush 34, is not integral to the handle 12b and is

disposable, not permanent. As such, utensil 64b can be removed from the cavity 62b by the user and manipulated appropriately to generally clean and remove particles between the user's teeth. Following usage, the utensil 64b can be re-inserted into the cavity 62b for storage. Additionally, the utensil 64b can be screwed to, snap fit to, or frictionally attached to the cavity so that it stays in place when not being used.

Referring to FIG. 9, in a fourth embodiment of the oral cleaning apparatus 10c of the present invention, the oral cleaning apparatus 10c is comprised of an elongated handle 12c and a head component 14c. The elongated handle 12c has a proximal end 30c and a distal end 32c. The elongated handle 12c of this embodiment is generally cylindrical in shape and is partially hollow, defining a cavity 62c.

An opening 72c to the hollow cavity 62c is adjacent the distal end 32c of the handle 12c. The entrance to the cavity 62c may have threads or connecting means (not shown) which allow a dental hygiene utensil 64c to be attached thereto. In that regard, the brush portion 66c of the utensil 64c extends into the cavity 62c and the extension portion 68c screws into, snaps into or is fixed to the walls of the cavity 62c entrance 72c. The brush portion 66c of the utensil 64c may be disposable, i.e., removably attached to the utensil 64c. In such an embodiment, extra brush portions 66c may be stored in the cavity 62c.

The handle 12c further has vent holes 70c which extend through the outer wall of the handle 12c and into the cavity 62c. The vent holes 70c allow air to pass freely from the environment to the cavity 62c to not only dry the brush 66c, but also to maintain a cleaner environment within the cavity 62c.

Rather than being entirely rigid, the handle 12c of the embodiment illustrated in FIG. 9 has a flexible portion 16c located adjacent to the most proximal end 30c of the handle 12c. The flexible portion 16c connects the handle 12c to the neck portion 17c of the head component 14c. The flexible portion 16c operates as a

leaf spring or shock absorber between the neck portion 17c and the handle 12c, allowing the head component 14c to flex relative of the handle 12c.

The head component 14c has a first side 50c and a second side 52c. Both the first and second sides 50c,52c are convex in shape and include a first section 18c
5 comprised of a pre-cleaning portion 24c, a second section 20c comprised of a deep cleaning portion 26c, and a third section 22c comprised of a final-cleaning absorbent portion 28c. Each section 18c,20c,22c is similar to their respective sections described in previous embodiments. The head component 14c is connected to the neck portion 17c. Similar to the dental hygiene utensil 64c (which screws into, snaps into, or is
10 frictionally fixed to the entrance of the cavity 62c at the distal end 32c of the handle), the head component 14c screws into, snaps into, or is fixed to the neck portion 17c. The embodiment illustrated in FIG. 9 shows the head component 14c removed from the neck portion 17c. The connection between the handle 12c and the head component 14c allows the head component 14c to rotate 180° such that both the first side 50c
15 and the second side 52c can be utilized for cleaning purposes.

Referring now to FIG. 10, a fifth embodiment of the oral cleaning apparatus 10d of the present invention is illustrated. This embodiment is similar to the embodiment illustrated in FIGS. 5 and 6 in that it comprises a handle 12d, a head component 14d and a flexible connector 16d. The handle 12d is modified however to
20 include a housing 74 on a surface near the distal end 32d. The housing 74 defines a cavity 62d which houses a dental hygiene utensil 64d. The entrance 72d to the housing 74 may be threaded to allow a dental hygiene utensil 64d to be attached thereto (or the utensil 64d may be snap fitted or frictionally fitted in the housing 74). Optionally, the housing 74 may include vent holes (not shown) which extend into the
25 cavity 62d for the purposes described above.

A sixth embodiment is illustrated in FIG. 11. This embodiment combines a generally cylindrical handle 12e with a head component 14e similar to the head

component 14 disclosed in FIGS. 2, 5-7 and 10. The handle 12e includes a cavity 62e which receives utensil 64e. The cavity includes vent holes 70e. The utensil 64e can be affixed in the cavity as previously described. The head component 14e is connected to the handle 12e via flexible connector 17e and consists of three sections
5 comprised of a pre-cleaning portion, a deep cleaning portion and a final cleaning absorbent portion, respectively.

Another embodiment of the oral cleaning apparatus 10f is illustrated in FIGS. 12 and 13. Preferably, the oral cleaning apparatus 10f of this embodiment comprises an elongated handle 12f, a head component 14f, and a flexible connector
10 16f between the elongated handle 12f and the head component 14f. The head component 14f may be removably attached to the flexible connector 16f. Unlike the previous embodiments, the oral cleaning apparatus 10f of this embodiment is modified to comprise a sealable cavity 76f within the elongated handle 12f. The oral cleaning apparatus 10f also contains solution 78f in the sealable cavity 76f and an
15 attachment 80f for both sealing the cavity 76f and applying the solution 78f to a surface of the mouth.

Referring again to FIGS. 12 and 13, the elongated handle 12f has a proximal end 30f and a distal end 32f. Like the previous embodiments, the flexible connector 16f is adjacent the proximal end 30f of the handle 12f. Similarly, the
20 handle 12f may have an integral brush (not shown) extending substantially perpendicular from the handle 12f adjacent the distal end 32f. Unlike the previous embodiments, however, other portions of the handle 12f of this embodiment are modified. Specifically, handle 12f has a hollowed out portion which forms the sealable cavity 76f. The sealable cavity 76f acts as a reservoir for the dental solution
25 78f. Preferably the cavity 76f is molded into the handle 12f during manufacture. Alternately, the cavity 76f may be added to the handle 12f during a subsequent machining step. The cavity 76f has an opening 82f adjacent the distal end 32f of the

handle 12f. This one opening 82f is the only access to the sealable cavity 76f. Unlike cavities of the previous embodiments, the sealable cavity 76f does not include any vent holes or other port outside of the single opening 82f. Accordingly, when the sealed cavity 76f is sealably closed, solution maintained therein 78f cannot escape.

5 Referring now to FIGS. 12 and 14A-14B, the oral cleaning apparatus 10f further includes a removable attachment 80f. The attachment 80f is capable of attaching to the distal end 32f of the handle 12f. The attachment 80f has an applicator or brush portion 84f connected to a handle or cap portion 86f. As shown in FIGS. 14A-14B, the brush portion 84f is comprised of either angled or straight bristles.

10 Brush portion 84f may be similar to either the interproximal brush 34 of the first embodiment of FIG. 1, or the brush 66b of the dental hygiene utensil 64b illustrated in FIG. 8. The brush portion 84f is preferably disposable such that following a period of use, the brush portion 84f may be removed from the cap portion 86f and replaced with a new brush portion 84f. When the attachment 80f is connected to the handle

15 12f, the brush portion 84f is stored within the cavity 12f and in contact with the dental solution 78f. The cap portion 86f of the attachment 80f performs multiple functions. First, the cap portion 86f operates to mate with the handle 12f at the opening 82f of the cavity 76f. As such, the cap portion 86f may either be screwed into or on, frictionally fit, or snap fit to the handle 12f. Similarly, the end of the opening 82f

20 may have a means for allowing the cap portion 86f to mate to the opening 82f of the handle 12f. When the attachment 80f is securely attached to the handle 12f via the cap portion 86f, the inside of the cavity 76f is sealed from the outside environment. Second, the cap portion 86f operates as a holder for the brush portion 84f. The brush portion 84f is insertably fixed into the cap portion 86f and operates as a means for

25 holding the attachment 80f with a brush 84f without contacting the solution 78f on the brush 84f.

The solution 78f maintained in the sealable cavity 76f is preferably comprised of an antiseptic, medication, or other hygienic cleansing solution.

Additionally, the solution 78f can be comprised of a whitening solution. Because of the different formations of the brush 84f, the solution can take the form of a liquid, gel or paste. To apply the solution 78f to the desired location, the attachment 80f is disconnected from the handle 12f. This breaks the seal between the handle 12f and the cap 80f. As the brush 84f is removed from the cavity 76f, an amount of solution 78f therein adheres to the brush 84f. This solution 78f on the brush 84f can then be applied to any surface in the mouth.

Similar to the previous embodiments, the head component 14f of the oral cleaning apparatus 10f of this embodiment has a first side 50f and a second side 52f. Either of both of the first and second sides 50f,52f include a first section 18f comprised of a pre-cleaning portion 24f. Additionally, they may also include a second section 20f comprised of a deep cleaning portion 26f and a third section 22f comprised of a final cleaning absorbent portion 28f. Each section 18f, 20f, 22f is similar to their respective sections described in previous embodiments.

While the specific embodiments have been illustrated and described, numerous modifications come to mind without significantly departing from the spirit of the invention, and the scope of protection is only limited by the scope of the accompanying Claims.

CLAIMS

I Claim:

- 5 i. An oral cleaning apparatus for cleaning the surface
 of the tongue, the apparatus comprising:
 an elongated handle;
 a head component having a first section and a second section, the
first section being comprised of a pre-cleaning portion and the second section being
10 comprised of a cleaning portion; and,
 a connector between the elongated handle and the head component.
- ii. The oral cleaning apparatus of Claim 1, wherein the
 head component further has a third section, the third section
 being comprised of an absorbent portion.
- 15 iii. The oral cleaning apparatus of Claim 1, wherein the
 connector is flexible and allows for variable pressure to be
 exerted on the tongue by the apparatus.
- iv. The oral cleaning apparatus of Claim 1, wherein the
 handle has an integral brush extending substantially
20 perpendicular from the handle.
- v. The oral cleaning apparatus of Claim 1, wherein the
 handle has a roughened surface for gripping the apparatus.
- vi. The oral cleaning apparatus of Claim 1, wherein the
 pre-cleaning portion comprises a loop material.
- vii. The oral cleaning apparatus of Claim 1, wherein the
 pre-cleaning portion comprises a semi-abrasive fabric.

- viii. The oral cleaning apparatus of Claim 1, wherein the cleaning portion comprises a hook material.
- ix. The oral cleaning apparatus of Claim 1, wherein the cleaning portion comprises a plurality of projections extending from the head component.
- x. The oral cleaning apparatus of Claim 2, wherein the absorbent portion comprises a sponge.
- xi. The oral cleaning apparatus of Claim 1, wherein the head component is removably attached to the connector.
- xii. An oral cleaning apparatus for cleaning and removing particles from the surface of the tongue, the apparatus comprising:
an elongated handle;
5 a brush connected to the handle;
a head component having a first side and a second side, the first side comprised of a pre-cleaning pad, cleaning projections, and an absorbent pad; and,
a flexible connector between the elongated handle and the head component for controlling the pressure exerted on the surface of the tongue by the
10 apparatus.
- xiii. The oral cleaning apparatus of Claim 12, wherein the handle has a roughened surface for gripping the apparatus.
- xiv. The oral cleaning apparatus of Claim 12, wherein
15 the pre-cleaning pad is comprised of a material having a plurality of loops.

- xv. The oral cleaning apparatus of Claim 12, wherein the cleaning projections are comprised of a plurality of flexible projections extending from the head component.
- xvi. The oral cleaning apparatus of Claim 15, wherein
5 the cleaning projections are integral with the head component.
- xvii. The oral cleaning apparatus of Claim 12, wherein the absorbent pad comprises a sponge.
- xviii. The oral cleaning apparatus of Claim 12, wherein
10 the head component is removably connected to the flexible connector.
- xix. An oral cleaning apparatus for cleaning and removing particles from the surface of the tongue, the apparatus comprising:
15 an elongated handle having a proximal and distal end, the handle further having a cavity near the distal end;
a head component having a first side and a second side, the first side comprised of a pre-cleaning pad, cleaning projections and an absorbent pad; and
a flexible connector between the proximal end of the handle and
20 the head component.
- xx. The oral cleaning apparatus of Claim 19, further including a utensil positioned in the cavity.
- xxi. The oral cleaning apparatus of Claim 19, wherein the head component is removably attached to the flexible connector.
- xxii. The oral cleaning apparatus of Claim 19, wherein
5 the cleaning projections are semi-rigid.

- xxiii. The oral cleaning apparatus of Claim 22, wherein the cleaning projections are comprised of a plurality of rows of cleaning projections.
- 5 xxiv. The oral cleaning apparatus of Claim 19, wherein the handle has a roughened surface for gripping the apparatus.
- xxv. The oral cleaning apparatus of Claim 19, wherein the pre-cleaning pad is comprised of a material having a plurality of loops.
- 10 xxvi. The oral cleaning apparatus of Claim 19, wherein the cleaning projections are integral with the head component.
- xxvii. The oral cleaning apparatus of Claim 19, wherein the absorbent pad comprises a sponge.
- 15 xxviii. The oral cleaning apparatus of Claim 19, wherein a brush is connected to the handle.
- xxix. An oral cleaning apparatus for cleaning and removing particles from the surface of the tongue, the apparatus comprising:
- 20 an elongated handle having a proximal and distal end, the handle having a cavity, and the handle further having a flexible portion adjacent the proximal end; and,
- a head component having a first side and a second side, the first and second sides being comprised of a pre-cleaning pad, cleaning fingers and an
- 25 absorbent pad, the head component being removably connected to the proximal end of the handle.

- xxx. The oral cleaning apparatus of Claim 29, wherein the first and second sides of the head component are convex.
- xxxi. The oral cleaning apparatus of Claim 29, wherein a utensil is positioned in the cavity.
- xxxii. The oral cleaning apparatus of Claim 29, wherein a utensil is removably attached to an end of the cavity.
- xxxiii. The oral cleaning apparatus of Claim 29, wherein the head component is screwed to the proximal end of the handle.
- xxxiv. The oral cleaning apparatus of Claim 29, wherein the head component is snap fit to the proximal end of the handle.
- xxxv. The oral cleaning apparatus of Claim 29, wherein the pre-cleaning pad is comprised of a material having a plurality of loops.
- 5 xxxvi. The oral cleaning apparatus of Claim 29, wherein the cleaning projections are comprised of a plurality of flexible projections extending from the head component.
- xxxvii. The oral cleaning apparatus of Claim 29, wherein the cleaning projections are integral with the head component.
- 10 38. The oral cleaning apparatus of Claim 29, wherein the absorbent pad comprises a sponge.
39. The oral cleaning apparatus of Claim 32, wherein the pre-cleaning pad is comprised of a material having a plurality of loops.

40. The oral cleaning apparatus of Claim 32, wherein the cleaning projections are comprised of a plurality of flexible projections extending from the head component.

5 41. The oral cleaning apparatus of Claim 32, wherein the cleaning projections are integral with the head component.

42. The oral cleaning apparatus of Claim 32, wherein the absorbent pad comprises a sponge.

43. An oral cleaning apparatus for cleaning the surface of the tongue, the apparatus comprising:

5 an elongated handle, the handle having a cavity;
a head component having a cleaning portion; and,
a connector between the elongated handle and the head component.

44. The oral cleaning apparatus of Claim 43 further comprising an attachment, the attachment having an applicator portion and a cap portion, the applicator portion of the attachment being stored within the cavity.

10 45. The oral cleaning apparatus of Claim 43 further comprising a solution within the cavity.

46. The oral cleaning apparatus of Claim 44 wherein the cap portion mates with the handle to seal the cavity.

15 47. The oral cleaning apparatus of Claim 46 wherein the cap portion screws into the handle.

48. The oral cleaning apparatus of Claim 44 wherein the cleaning portion is comprised of a first section and a second section, the first section having a pre-cleaning portion and the second section having a deep cleaning portion.

20 49. The oral cleaning apparatus of Claim 48 wherein the head component further has a third section, the third section being comprised of an absorbent portion.

50. The oral cleaning apparatus of Claim 44 wherein the connector is flexible and allows for variable pressure to be exerted on the tongue by the apparatus.

51. The oral cleaning apparatus of Claim 44 wherein the handle has an integral brush extending substantially perpendicular from the handle.

5 52. The oral cleaning apparatus of Claim 48 wherein the pre-cleaning portion comprises a loop material.

53. The oral cleaning apparatus of Claim 48 wherein the pre-cleaning portion comprises a semi-abrasive fabric.

10 54. The oral cleaning apparatus of Claim 48 wherein the deep cleaning portion comprises a hook material.

55. The oral cleaning apparatus of Claim 48 wherein the deep cleaning portion comprises a plurality of projections extending from the head component.

56. The oral cleaning apparatus of Claim 44 wherein the head component is removably attached to the connector.

15 57. An oral cleaning apparatus for cleaning and removing particles from the surface of the tongue, the apparatus comprising:

an elongated handle, the handle having a proximal and distal end;

a cavity within the handle, wherein the cavity has an opening adjacent the distal end of the handle;

20 an attachment, the attachment being capable of connecting to the distal end of the handle;

a head component having a plurality of sections wherein at least one of the plurality of sections is comprised of a cleaning portion, the head component being adjacent the proximal end of the handle.

25 58. The oral cleaning apparatus of Claim 57 further comprising a solution within the cavity.

59. The oral cleaning apparatus of Claim 58 wherein the

attachment is comprised of a applicator connected to a cap, the applicator capable of being inserted into the cavity.

60. The oral cleaning apparatus of Claim 59 wherein the applicator is a brush.

5 61. The oral cleaning apparatus of Claim 60 wherein the cap is removably connected to the distal end of the handle to seal the cavity and prevent solution from escaping from the cavity.

62. The oral cleaning apparatus of Claim 57 wherein the handle has a roughened surface for gripping the apparatus.

10 63. The oral cleaning apparatus of Claim 57 wherein another one of the plurality of sections is comprised of a pre-cleaning pad, the pre-cleaning pad being a material having a plurality of loops.

15 64. The oral cleaning apparatus of Claim 57 wherein the cleaning projections are comprised of a plurality of flexible projections extending from the head component.

65. The oral cleaning apparatus of Claim 57 wherein the cleaning portion is comprised of projections integral with the head component.

66. The oral cleaning apparatus of Claim 57 wherein the head component further comprises an absorbent pad.

20 67. The oral cleaning apparatus of Claim 57 further comprising a connector between the elongated handle and the head component.

68. The oral cleaning apparatus of Claim 67 wherein the head component is removably connected to the connector.

25 69. An oral cleaning apparatus for cleaning and removing particles from the surface of the tongue, the apparatus comprising:

an elongated handle having a proximal and distal end, the handle further having a sealable cavity wherein the cavity has an opening adjacent the distal end of the handle;

5 an attachment comprised of an applicator and a cap, at least a portion of the attachment being within the cavity;

a head component having a plurality of sections, one of the plurality of sections being comprised of a pre-cleaning portion and another one of the plurality of sections being comprised of a cleaning portion; and,

10 a flexible connector between the proximal end of the handle and the head component.

70. The oral cleaning apparatus of Claim 69 further comprising a solution within the sealable cavity.

71. The oral cleaning apparatus of Claim 69 wherein the attachment mates with the opening of the cavity to seal the cavity.

15 72. The oral cleaning apparatus of Claim 69 wherein the applicator is a flexible brush.

73. The oral cleaning apparatus of Claim 70 wherein the solution is removed from the cavity with the applicator.

20 74. The oral cleaning apparatus of Claim 69, the head component further comprising a first side and a second side, the first side comprised of a pre-cleaning pad, cleaning projections and an absorbent pad.

75. The oral cleaning apparatus of Claim 69 wherein the head component is removably attached to the flexible connector.

25 76. An oral cleaning apparatus for cleaning and removing particles from the surface of the tongue, the apparatus comprising:

an elongated handle having a proximal and distal end, the handle having a sealable cavity with one opening, the opening being adjacent the distal end, the handle further having a flexible portion adjacent the proximal end;

an attachment removably connected to the handle, a portion of the attachment stored within the cavity; and,

a head component having a first side and a second side, the first and second sides being comprised of a pre-cleaning pad, cleaning fingers and an absorbent pad, the head component being removably connected to the proximal end of the handle.

10 77. The oral cleaning apparatus of Claim 76 further comprising solution within the cavity.

78. The oral cleaning apparatus of Claim 76 wherein the first and second sides of the head component are convex.

15 79. The oral cleaning apparatus of Claim 76 wherein the attachment is comprised of a brush and a cap, the cap mating with the opening of the cavity to seal the cavity.

80. The oral cleaning apparatus of Claim 79 wherein the cap screws into the opening of the cavity.

20 81. The oral cleaning apparatus of Claim 76 wherein the pre-cleaning pad is comprised of a material having a plurality of loops.

82. The oral cleaning apparatus of Claim 76 wherein the cleaning projections are comprised of a plurality of flexible projections extending from the head component.

25 83. The oral cleaning apparatus of Claim 81 wherein the cleaning projections are integral with the head component.

84. The oral cleaning apparatus of Claim 76 wherein the absorbent pad comprises a sponge.

85. The oral cleaning apparatus of Claim 76 further comprising a connector between the elongated handle and the head component.

86. An oral cleaning apparatus for cleaning and removing particles from the surface of the tongue, the apparatus comprising:

5

an elongated handle, the handle having a proximal and distal end;

a cavity within the handle, wherein the cavity has one opening, the opening being adjacent the distal end of the handle;

solution within the cavity;

10

an attachment comprised of a brush and a cap, the brush being within the cavity and the cap removably connected to the opening of the handle, the cap further sealing the solution in the cavity;

a head component having a plurality of sections wherein at least one of the plurality of sections is comprised of a cleaning portion, the head component being adjacent the proximal end of the handle.

15

FIG. 1

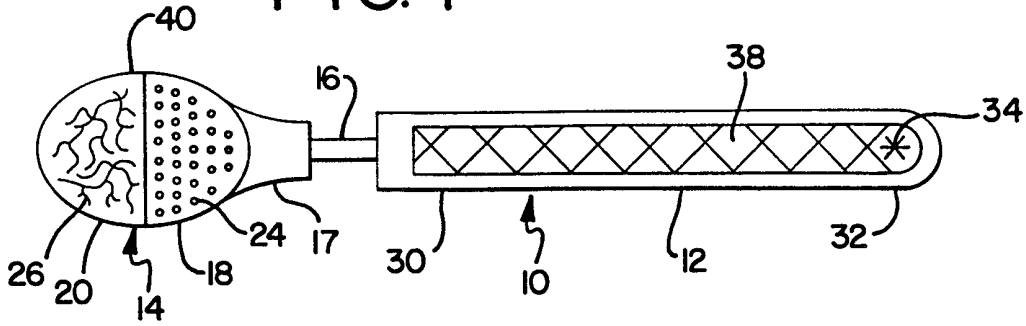


FIG. 2

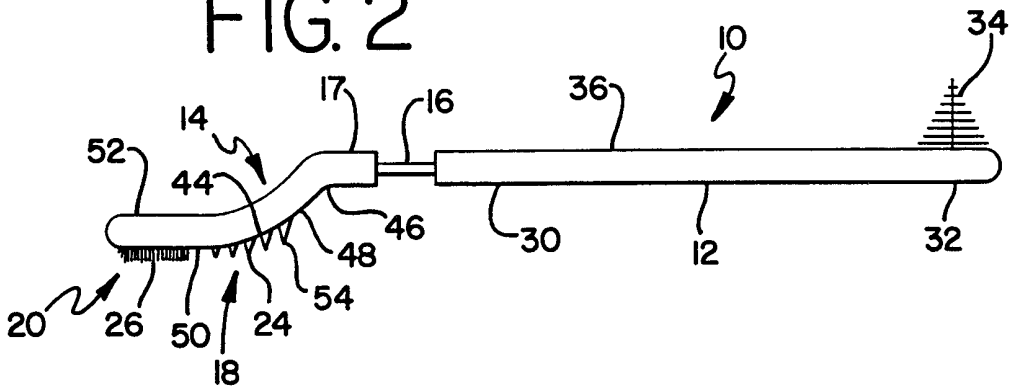


FIG. 3A



FIG. 3B

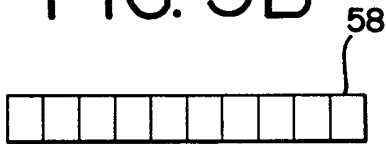


FIG. 3C



FIG. 4A



FIG. 4B



FIG. 4C

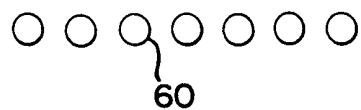


FIG. 5

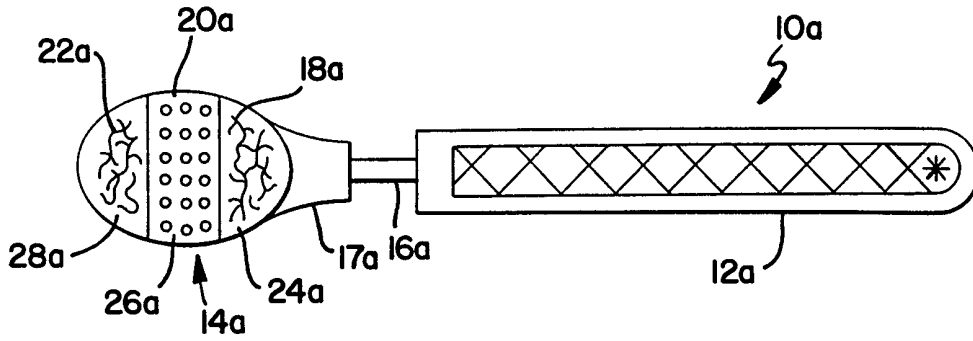


FIG. 6

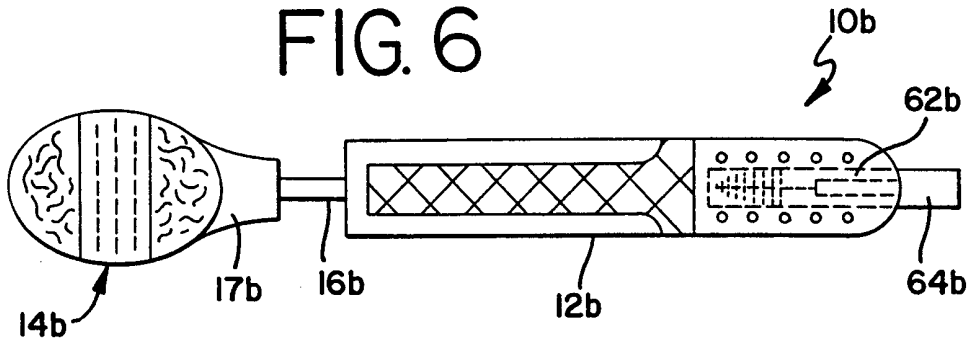


FIG. 7

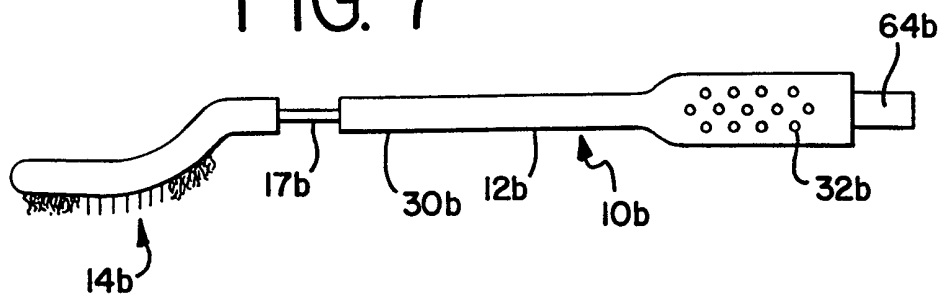


FIG. 8

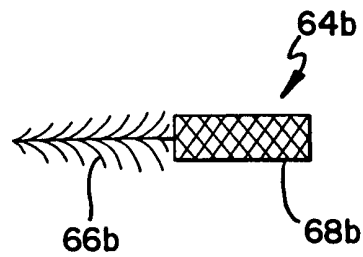


FIG. 9

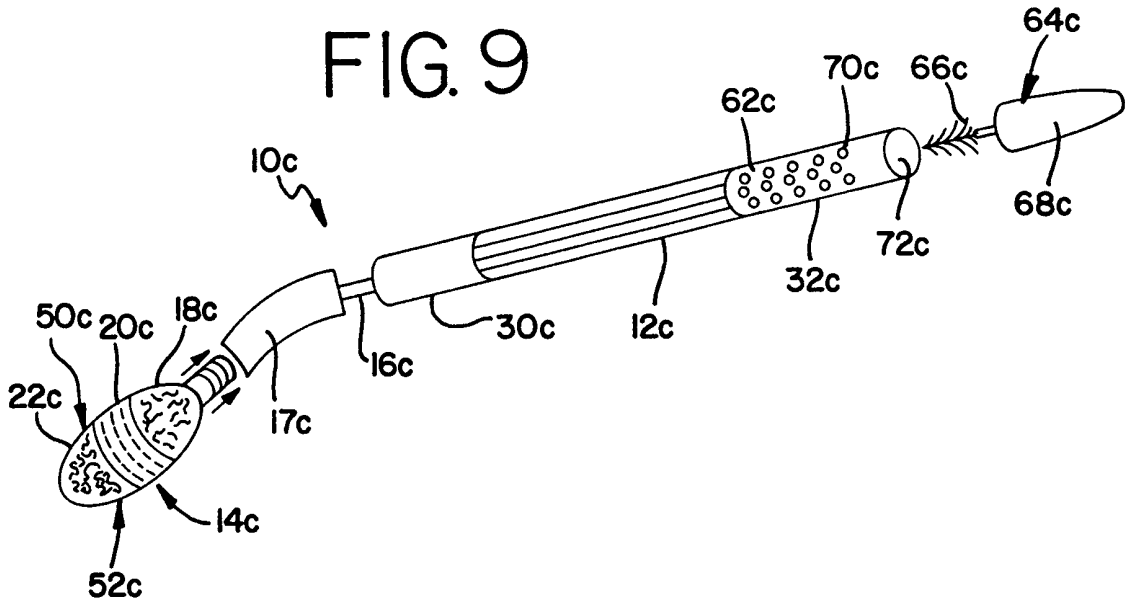


FIG. 10

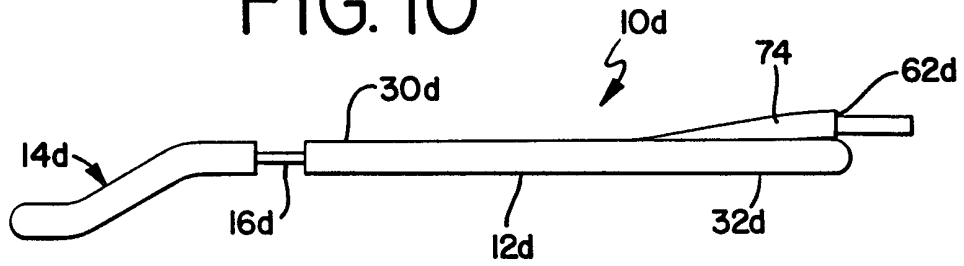


FIG. 11

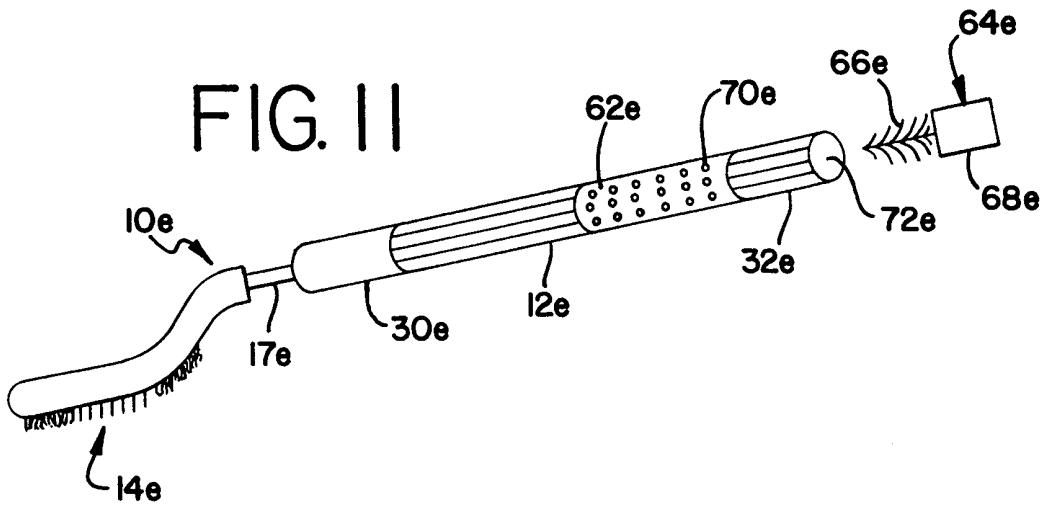


FIG. 12

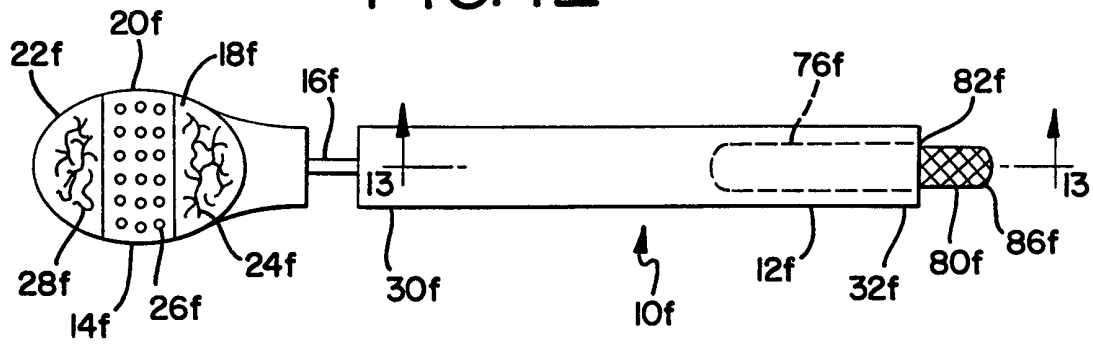


FIG. 13

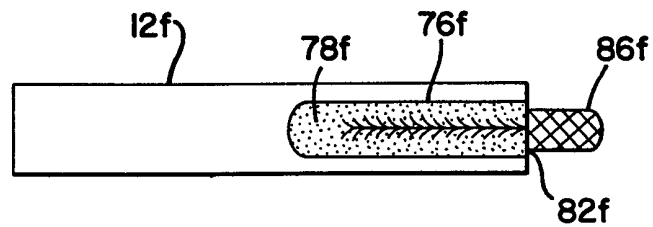


FIG. 14A

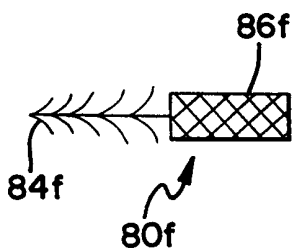
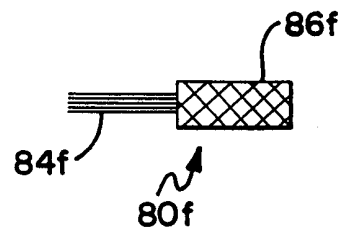


FIG. 14B



INTERNATIONAL SEARCH REPORT

International Application No PCT/US 98/27315

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 6 A46B9/04 A46B9/06 A61B17/24 A46B5/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 IPC 6 A46B A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 226 197 A (NACK RACHEL ET AL) 13 July 1993 cited in the application see abstract; figures 2,3 ---	1, 12, 19, 29, 43, 57, 69, 76, 86
A	PATENT ABSTRACTS OF JAPAN vol. 098, no. 003, 27 February 1998 & JP 09 294688 A (MAINDO ATSUPU:KK), 18 November 1997 see abstract ---	1
A	GB 2 252 909 A (YAP KON HIN;HEW AH KOW) 26 August 1992 see abstract; figure 2 --- ---	19, 29, 43, 57, 69, 76, 86
-/--		

Further documents are listed in the continuation of box C. Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "&" document member of the same patent family
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Date of the actual completion of the international search 15 April 1999	Date of mailing of the international search report 23/04/1999
---------------------------------------------------------------------------------------	-----------------------------------------------------------------------------

Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Wehr, W
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 98/27315

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	PATENT ABSTRACTS OF JAPAN vol. 017, no. 321 (C-1072), 18 June 1993 & JP 05 031129 A (TADASHI YOSHIMATSU), 9 February 1993 see abstract -----	29
A	----- US 2 491 274 A (N. MC. NEILL) 13 December 1949 cited in the application see column 4, paragraph 2; figure 1 -----	12,19,29

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 98/27315

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5226197 A	13-07-1993	NONE	
GB 2252909 A	26-08-1992	NONE	
US 2491274 A	13-12-1949	NONE	