

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
12 January 2012 (12.01.2012)

(10) International Publication Number
WU 2012/005757 A1

(51) International Patent Classification:
A46B 9/04 (2006.01) **A61C 15/00** (2006.01)

(21) International Application Number:
PCT/US201 1/001 154

(22) International Filing Date:
28 June 201 1 (28.06.201 1)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
12/803,595 29 June 2010 (29.06.2010) US

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO,

DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(54) Title: DENTAL CARE DEVICE

(57) Abstract: A dental care device utilizing a shaft having a proximal end portion, a distal end portion, and an intermediate portion there between. A dental brush is located on the shaft at the distal end while a wishbone support is found on the proximal end of the shaft. The wishbone support includes a gripping post and a groove which allows dental floss to extend from the post, along its outer surface, and to span the end legs of the wishbone for use.



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DENTAL CARE DEVICECROSS-REFERENCES TO RELATED APPLICATIONS

The present application is a continuation-in-part of
5 prior filed patent applications serial no: 12/316,971, filed 17
December 2008 and serial no: 12/803,595, filed 29 June 2010.

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DENTAL CARE DEVICE**BACKGROUND OF THE INVENTION**

The present invention relates to a novel and useful dental care device.

5 Many dental care devices have been proposed to allow a person to carry out dental hygiene procedures such as brushing of teeth and flossing between adjacent teeth.

In the past, dental hygiene devices have employed the combination of toothbrushes and dental floss holders. For
10 example, United States Patent Application Publication 2003/0019503 describes a dental floss holder which allows the dispensing of dental floss and also includes a toothbrush on the opposite end of the handle .

United States Patent Application Publication
15 2004/0187887, DES 191,821, DES 283,761, and DES 290,312 show the combination of a toothbrush in a dental floss holder in the form of a fork opposite the brush along the shaft.

United States Patent Application Publication
2005/0211262 describes a floss holder in combination with a
20 toothbrush in which the floss is dispensed from the inside of the legs of the fork to the exterior thereof.

United States Patents 2,233,936 and DES 420,805
describe toothbrush and flosser combination in which the floss is
extended from a spool on the toothbrush and held across the legs
25 of a fork by a flange.

United States Patents 1,537,853 and 2,113,439 teach
dental cleaning devices in which a toothbrush is used in
combination with a floss dispenser in the form of a fork that

uses notches on the end of the fork to steady the floss material.

United States Patents 2,517,806, 3,850,182, 4,016,891,
and Patent Application Publication 2004/0040571 illustrate
combined toothbrush and dental floss holders in which the dental
5 floss is extended to a fork which includes an exterior groove to
guide the floss to the spanning portion of the legs.

A dental care device which utilizes a toothbrush
structure and a floss holder which is easy to use to be a notable
advance in the field of the dental arts.

BRIEF SUMMARY OF THE INVENTION

In accordance with the present invention a novel and useful dental care device is herein provided.

The dental care device of the present invention employs
5 a shaft having a proximal end portion, a distal end portion, and an intermediate portion therebetween.

A dental brush is located at the shaft distal end portion. A mechanism is also provided for allowing the replacement of the dental brush when it is worn.

10 The intermediate portion of the dental care device shaft may be formed with a chamber to hold a vibrator which augments the brushing action of the dental brush by the use of agitation. A Switch is also accessible at the intermediate portion to activate the vibrator.

15 Moreover, the dental care device of the present invention includes a wishbone support at the proximal end portion of the shaft. The wishbone support possesses an outer surface having a groove which extends along first and second legs of the wishbone. A movable post located on the wishbone is positioned
20 to allow the turning of the dental floss therearound in order to tightened the same and allow the spanning of the dental floss between the first and second legs. A spool is conveniently located on the top surface of the shaft to allow direct feeding of the dental floss strand around the post and to the legs of the
25 wishbone.

The wishbone legs may also include one of more picks that extend downwardly and maybe conveniently used to clean particulate matter from between the teeth of the user. Likewise,

a pick is rotatably held to the toothbrush head to permit the user to operate the same as a dental pick without reversing the grip of the toothbrush following brushing.

It may be apparent that a novel and useful dental care
5 device has been hereinabove described.

It is therefore an object of the present invention to provide a dental care device which allows the user to brush and to floss ones teeth without using separate implements.

Another object of the present invention is to provide a
10 dental care device which is capable of holding a strand of dental floss payed out from a spool on the outside surface of the device .

A further object of the present invention is to provide a dental care device which includes a vibrator mechanism which
15 provides cleaning motion to the bristles of the toothbrush and the same as being used to clean the teeth of the user.

Yet another object of the present invention is to provide a dental care device utilizing a toothbrush, a floss holder, and a vibrator in combination.

20 A further object of the present invention is to provide a dental care device utilizing a dental floss holder which is interchangeable on a toothbrush support.

The invention possesses other objects and advantages which will become apparent as the specification continues .

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

Fig. 1 is a side elevational view of the dental care device of the present invention.

Fig. 2 is a top plan view of the dental care device
5 depicted in Fig. 1.

Fig. 3 is a rear elevational view of the wishbone support used to hold dental floss at the proximal end portion of the shaft.

Fig. 4 is a top plan view of the wishbone support
10 holding dental floss.

Fig. 5 is a sectional view taken along line 5-5 of Fig.
3.

Fig. 6 is a side elevational view of the leg end portion depicted in Fig. 5.

Fig. 7 is a sectional view taken along line 7-7 of Fig.
15 1.

Fig. 8 is a top plan view showing the dental brush and rotatable pick, with the pick extended for use.

Fig. 9 is a top plan view of an alternate embodiment of
20 the present invention depicting a snap-in dental floss holder.

Fig. 10 is a rear elevational view of the embodiment shown in Fig. 9.

For a better understanding of the invention reference is made to the following detailed description of the preferred
25 embodiments of the invention which should be taken in conjunction with the above described drawings.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS OF THE
INVENTION

Various aspects of the present invention will evolve from the following detailed description of the preferred
5 embodiments thereof which should be referenced to the prior described drawings.

An embodiment of the invention is depicted as whole in the drawings by reference character 10. Device 10 includes a shaft 12 which may be constructed of any suitable rigid or semi-
10 rigid material. Shaft 12 is generally formed with a distal end portion 14, proximal end portion 16, and an intermediate portion 18. In general, intermediate portion 18 is used to grip device 10 and gripping surface 20 aids in this endeavor, Fig. 1.

Again, with reference to Fig. 1, it may be observed
15 that distal end portion 14 of shaft 12 serves as the location for dental brush 22. Dental brush 22 is detachable from shaft 12 via a set screw 24 which holds ends 26 and 28 in overlying or overlapping relationship, Figs. 1 and 7. Dental pick 30 is rotationally held to dental brush 22 by the use of pivot pin 32.
20 As in depicted in Figs. 2 and 8, dental pick 30 is capable of rotating outwardly into a position atop dental brush 22, to an orientation, as needed. Directional arrow 34 indicates such movements.

Referring now to Fig. 2, it may be observed that
25 intermediate portion 18 of shaft 12 includes a chamber 36 which holds a vibrator 38 and a source of power 40 in the form of a battery. Button 42, Fig. 1 is capable of activating and de-activating vibrator 38. Vibrator 38 is positioned against shaft

12 to provide such vibratory motion to brush 22 as well as to other portions of device 10.

Turning now to Figs. 1, 2, 3, and 4, it may be seen that wishbone support is found at proximal portion 16 of shaft 12. Wishbone support 44 is fixed to the end of shaft 12 at proximal end portion 16 and possesses an outer surface 46 and an inner surface 48. A groove 50 is located along outer surface 46 and generally extends along legs 52 and 54 of wishbone support 44, Figs. 4, 5, and 6. Post 56 fits within an opening 58 in wishbone support 44 and is movable upwardly and downwardly according to directional arrow 60, Fig. 3.

Spool 62 is found on proximal end portion 16 of shaft 18. Spool 62 is employed to hold a strand of dental floss 64 and to pay out or mete the same to post 56.

In any case, dental floss wrapped around post 56 travels along groove 50 and spans legs 52 and 54 as shown clearly in Fig. 3. Post 56, being moveable from opening 58, allows the capture of a portion of the strand of dental floss 64 and firmly holds the same when post 56 is pressed downwardly into wishbone support 44. A blade 66 attached to shaft 12, Fig. 4, allows the user to cut the bitter end of dental strand 64 after leading dental strand 64 from spool 62 and into contact with wishbone structure 44, heretofore described.

With reference to Figs. 3 and 6, it may be apparent that picks 68 and 70 are positioned at the ends of legs 52 and 54 of wishbone support 44. As is shown on Fig. 6, pick 68 does not interfere with strand 64 found in groove 50 of leg 52. The same structure applies to strands 64 relative to pick 70 and leg 54 of

wishbone support 44. Picks 68 and 70 may take various shapes commensurate with use, i.e.: normal teeth, teeth having braces etc .

Turning now to Figs 9 and 10, it may be observed that
5 another embodiment 10B of the device of the present invention is shown. Device 10B includes a floss holder 80 which is formed from a pair of legs 82 and 84 that are linked to one another by a intermediate portion 86. Intermediate portion 86 includes a circular aperture 87 having a circular aperture wall 88. Strand
10 of floss 90 spans legs 82 and 84, Figs 9 and 10. A toothbrush handle 92, terminates which may include the features of shaft 12, in a rectangular solid end 94 analagores to proximal end 16 of shaft 12. End 94 possesses a plurality of flexible protrusions 96 extending from upper surface 98 thereof. End 94 also includes
15 a channel 95 to fit floss holder 80. Intermediate portion 86 of floss holder 80, via circular aperture wall 88, engages plurality of protrusions 96 when intermediate portion 86 of floss holder 80 is pressed downwardly into channel 95, as shown in the positions depicted in Figs 9 and 10. Fig 10 also illustrates, in phantom,
20 the separation of floss holder 80 from channel 95 of rectangular solid end 94, connected to toothbrush handle 92, directional arrow 100.

In operation, the user places brush head 22 on shaft 12 by the use of set screw 24. Brushing may take place with or
25 without the use of vibrator 38 which is actuated by button 42 at the underside of intermediate portion 18 of shaft 12. Pick 30 may be employed by rotating the same outwardly from brush 22 about pivot pin 32. Directional arrow 34 on Figs. 2 and 8

depicts such movement. Of course, pivot pin 32 may hold pick 30 in its desired position by frictional tightening. Strand of dental floss 64 is unwound from spool 62 and around post 60. From this point, dental floss strand 64 is passed along groove 50 found in wishbone structure outer surface 46, is extended across legs 52 and 54, in a spanning configuration, and continues along groove 50 back to post 56 where it is again, preferably, wrapped. Post 56 is slightly loosened in this configuration and, subsequently, pressed downwardly to frictionally hold the wrapped portion of dental strand 64 against wishbone structure 54. Thus, strand 64 is now tight between legs 52 and 54 and may be used thereby. Bitter end of strand 64 may be cut by the use of blade 66. When the user has employed strands 64, new floss may be unwound from spool 62 and lead around post 56 through groove 50 and across legs 52 and 54 in the same manner. Picks 68 and 70 may be employed following flossing without reversing the grip on handle or shaft 12. The interchangeable floss holder 80 Figs 9 and 10, may be used with embodiment 10A of the device of the present invention. Floss holder 80 snaps in and out of channel 95 of end 94 by engagement of intermediate portion 86 with plurality of springy or flexible protrusions 96.

While in the foregoing, embodiments of the present invention have been set forth in considerable detail for the purposes of making a complete disclosure of the invention, it may be apparent to those of skill in the art that numerous changes may be made in such detail without departing from the spirit and principles of the invention.

WHAT IS CLAIMED IS

1. A dental care device utilizing a strand of dental floss, comprising:

5 a. a shaft, said shaft having a proximal end portion, a distal end portion, and an intermediate portion between said proximal and distal end portions;

b. a dental brush located at said shaft distal end;

c. a wishbone support, said wishbone support being
10 connected to said shaft proximal end portion, said wishbone support further including an outer surface, an inner surface, and first and second legs each having ends and further comprises a groove along said outer surface.

d. a post movably located at said wishbone support
15 between said ends of said first and second legs, said post positioned to allow the turning of the dental floss strand there around, said groove accommodating the strand of dental floss and allowing the extension of the dental floss between the ends of the first and second legs.

20 2. The device of claim 1 in which said post is movable relative to said wishbone support.

3. The device of claim 1 which additionally comprises one pick selectively extending from said first and second ends of the first and second legs.

25 4. The device of claim 1 in which said dental brush is removably held to said intermediate portion of said shaft.

5. The device of claim 1 which further comprises another pick rotatably attached to said distal end portion of said shaft.

6. The device of claim 1 which further comprises a vibrator positioned against said shaft.

7. The device of claim 1 which further comprises a spool located on said shaft said spool hold a part of the strand of dental floss, the strand of dental floss extending from said spool to said post.

8. The device of claim 7 in which said post is movable relative to said wishbone support.

9. The device of claim 7 which additionally comprises one pick selectively extending from said first and second ends of the first and second legs.

10. The device of claim 7 in which said dental brush is removably held to said intermediate portion of said shaft.

11. The device of claim 7 which further comprises another pick rotatably attached to said distal end portion of said shaft.

12. The device of claim 7 which further comprises a vibrator positioned against said shaft.

13. A dental care device utilizing a strand of dental floss, comprising:

a. a shaft, said shaft having a proximal end portion, a distal end portion, and an intermediate portion between said proximal and distal end portions;

b. a dental brush located at said shaft distal end;

c. a holder for the floss, said holder including first and second legs, the floss spanning said first and second legs, said hold further including an aperture;

d. a plurality of springy protrusions found at said

proximal portion, said plurality of protrusion removably engaging said holder at said aperture thereof.

14. The device of claim 13 in which said aperture is located intermediate said first and second legs.

5 15. The device of claim 14 in which said proximal portion of said shaft includes a channel for accommodating said floss holder .

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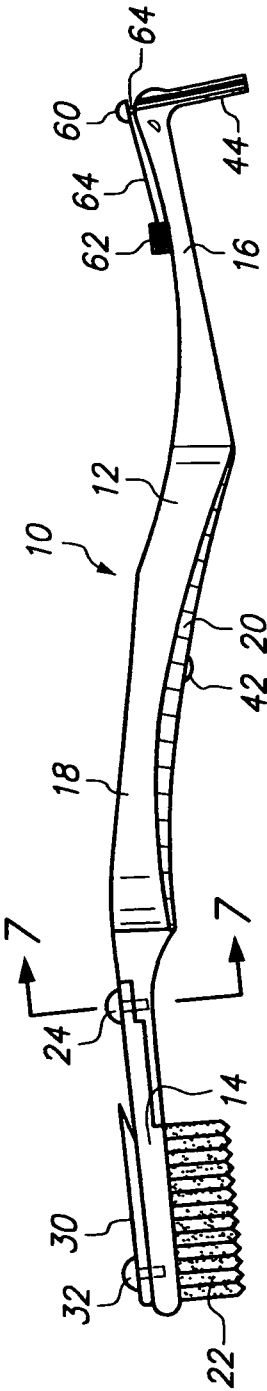


FIG. 1

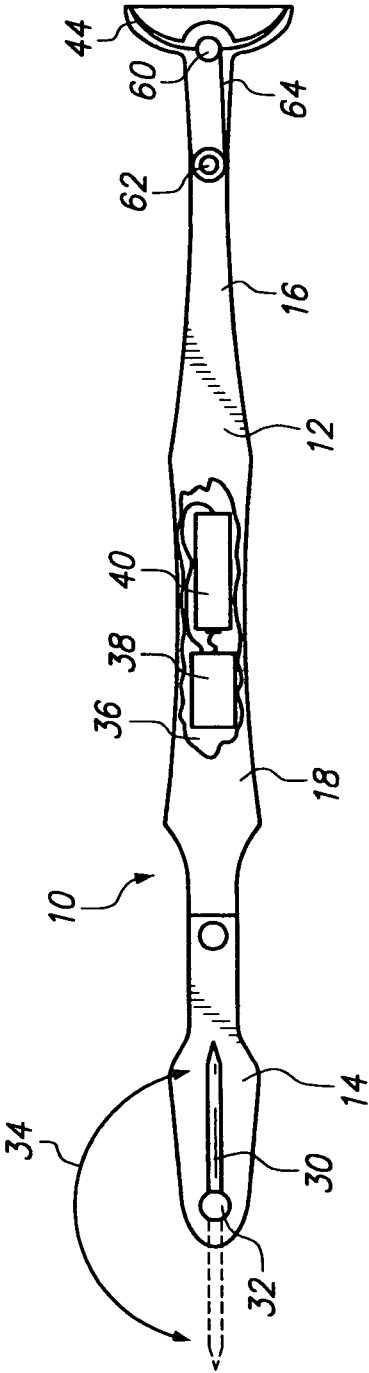


FIG. 2

2/4

FIG. 3

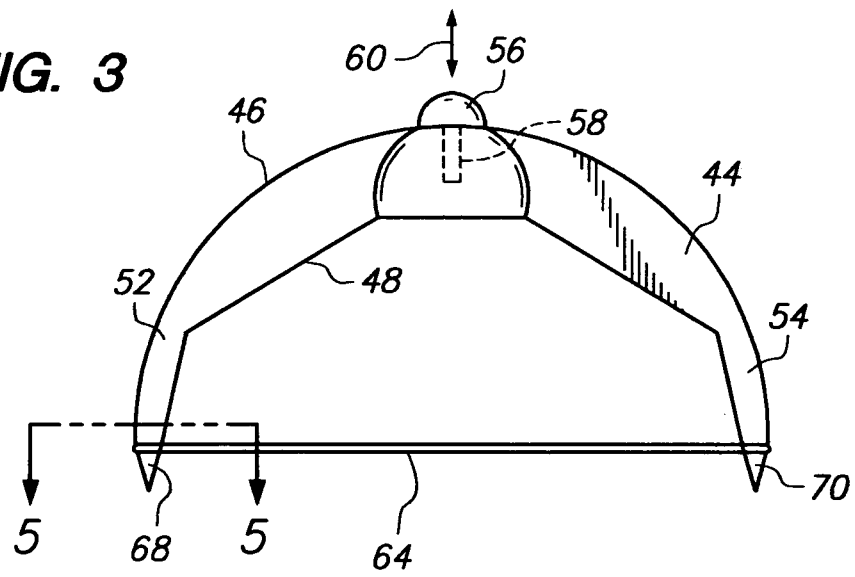
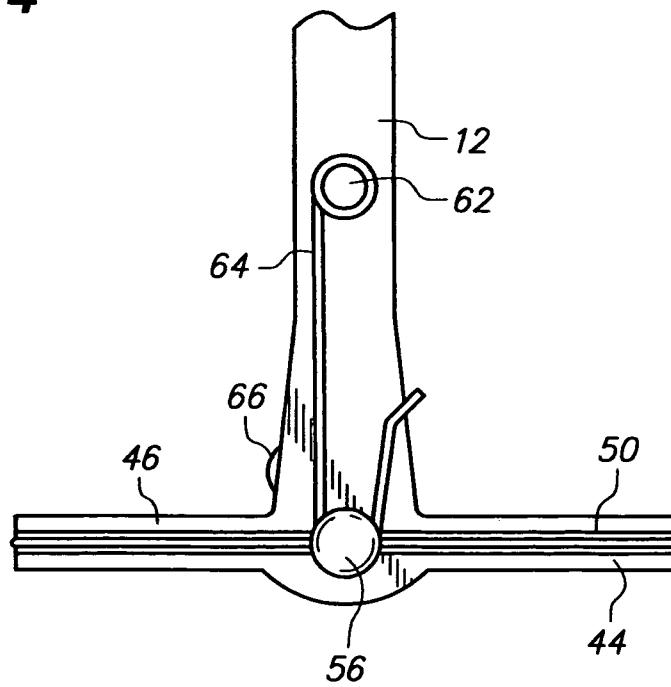


FIG. 4



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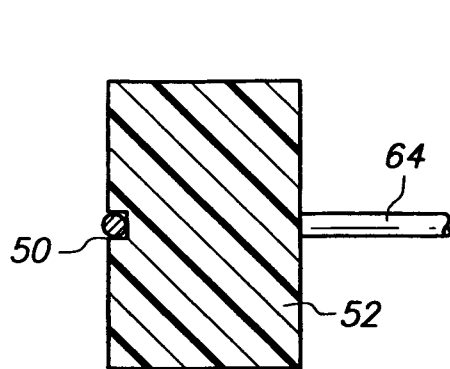


FIG. 5

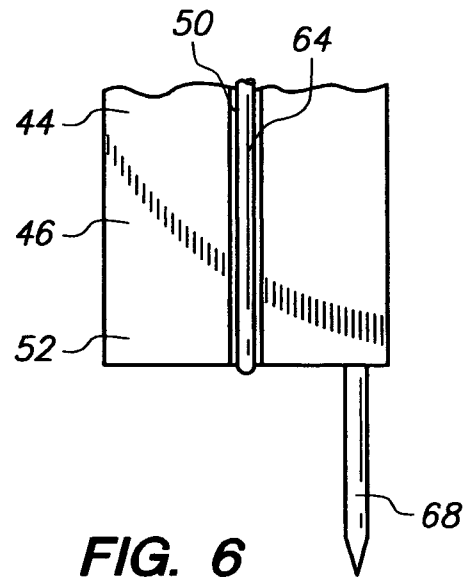


FIG. 6

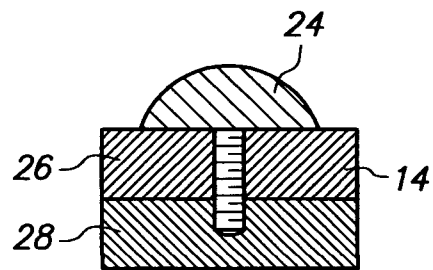


FIG. 7

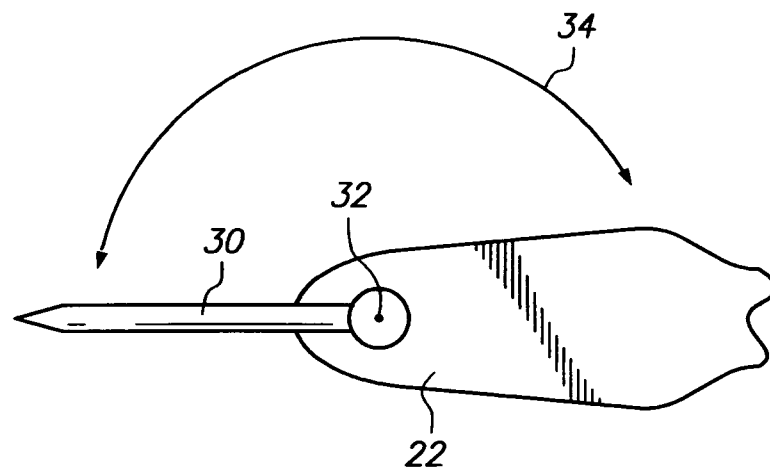


FIG. 8

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FIG. 9

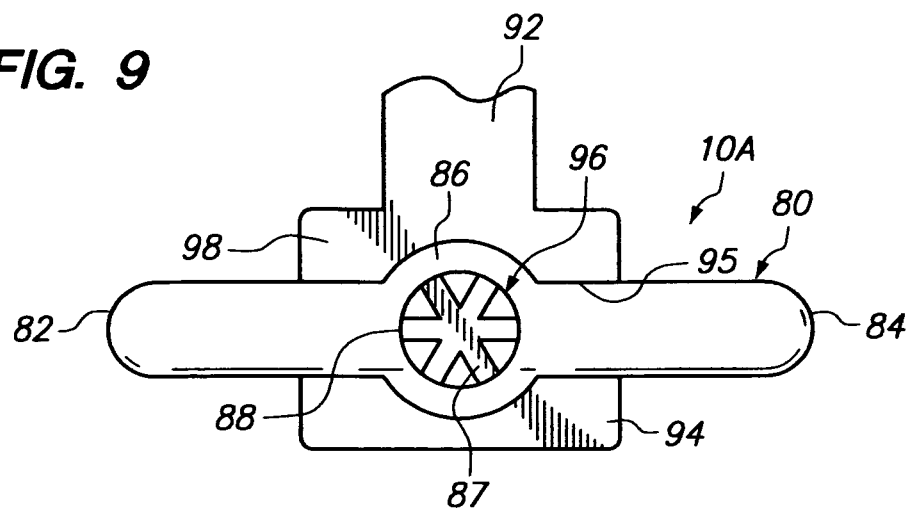
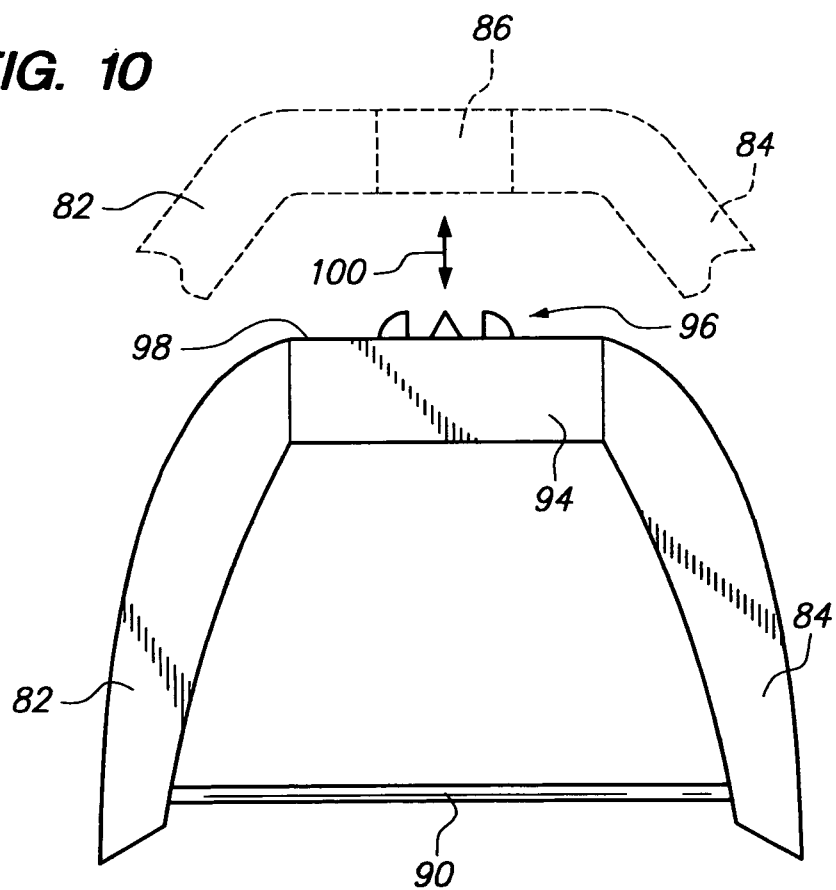


FIG. 10



INTERNATIONAL SEARCH REPORT		International application No. PCT/US1 1/01 154																		
A. CLASSIFICATION OF SUBJECT MATTER IPC: A46B 9/04(2006.01);A61C 15/00(2006.01) USPC: 15/167. 1; 132/324 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) U.S. : 15/1 67. 1, 22.2; 132/324, 308, 309, 3 1 1, 323, 329 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 practicable, search terms used) Please See Continuation Sheet																				
C. DOCUMENTS CONSIDERED TO BE RELEVANT <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Category *</th> <th style="width: 60%;">Citation of document, with indication, where appropriate, of the relevant passages</th> <th style="width: 30%;">Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">X --- Y</td> <td>U S 3,939,853 A (SPANONDIS) 24 February 1976(24.02.1976), see entire document.</td> <td>1-2, 4, 7, 8 and 10 ----- 3, 5, 6, 9, 11, 12</td> </tr> <tr> <td style="text-align: center;">Y</td> <td>U S 1,8 16,092 A (SCHMITTER, L.) 28 July 193 1(28.07. 193 1), see entire document.</td> <td>5 and 11</td> </tr> <tr> <td style="text-align: center;">Y</td> <td>U S 2005/0000537 A 1 (J U N K I N S) 06 January 2005(06.01.2005), see entire document.</td> <td>6 and 12</td> </tr> <tr> <td style="text-align: center;">Y</td> <td>U S 2,1 13,439 A (BEAN, C.) 05 April 1938(05.04.1938), see entire document.</td> <td>13-15</td> </tr> <tr> <td style="text-align: center;">Y</td> <td>U S 6,554,522 B 1 (CONNELLY et al) 29 April 2003(29.04.2003), see entire document.</td> <td>13-15</td> </tr> </tbody> </table>			Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X --- Y	U S 3,939,853 A (SPANONDIS) 24 February 1976(24.02.1976), see entire document.	1-2, 4, 7, 8 and 10 ----- 3, 5, 6, 9, 11, 12	Y	U S 1,8 16,092 A (SCHMITTER, L.) 28 July 193 1(28.07. 193 1), see entire document.	5 and 11	Y	U S 2005/0000537 A 1 (J U N K I N S) 06 January 2005(06.01.2005), see entire document.	6 and 12	Y	U S 2,1 13,439 A (BEAN, C.) 05 April 1938(05.04.1938), see entire document.	13-15	Y	U S 6,554,522 B 1 (CONNELLY et al) 29 April 2003(29.04.2003), see entire document.	13-15
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Y	U S 6,554,522 B 1 (CONNELLY et al) 29 April 2003(29.04.2003), see entire document.	13-15																		
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.																				
<table style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> * 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 application or patent 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 </td> <td style="width: 50%; vertical-align: top;"> "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 </td> </tr> </table>			* 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 application or patent 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																
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Date of the actual completion of the international search 02 November 20 11 (02. 11.20 11)		Date of mailing of the international search report 02 Nov OV 2011																		
Name and mailing address of the ISA/US Mail Stop PCT, Ann: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201		Authorize o I LINDA SHOLL Telephone No. (571) 272.439 1																		

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 11/01 154

Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item I.c of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of:

a. type of material



a sequence listing



table(s) related to the sequence listing

b. format of material



on paper



in electronic form

c. time of filing/furnishing



contained in the international application as filed



filed together with the international application in electronic form



furnished subsequently to this Authority for the purposes of search

2. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

3. Additional comments:

INTERNATIONAL SEARCH REPORT	International application No. PCT/US 11/01 154
Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)	
This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:	
1. <input style="width: 20px; height: 15px;" type="checkbox"/>	Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:
2. <input style="width: 20px; height: 15px;" type="checkbox"/>	Claims Nos.: because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. <input style="width: 20px; height: 15px;" type="checkbox"/>	Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).
Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)	
This International Searching Authority found multiple inventions in this international application, as follows:	
1. <input style="width: 20px; height: 15px;" type="checkbox"/>	As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. <input style="width: 20px; height: 15px;" type="checkbox"/>	As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of any additional fees.
3. <input style="width: 20px; height: 15px;" type="checkbox"/>	As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. <input style="width: 20px; height: 15px;" type="checkbox"/>	No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
Remark on Protest	<input style="width: 20px; height: 15px;" type="checkbox"/> The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee. <input style="width: 20px; height: 15px;" type="checkbox"/> The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation. <input style="width: 20px; height: 15px;" type="checkbox"/> No protest accompanied the payment of additional search fees.