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⑰ **Interdental toothbrush.**

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**Description**

This invention relates to interdental brushes.

An interdental brush is one which fits into spaces between and around the teeth. This kind of brush is generally used by people who have special brushing needs. For example, some bridges are suspensions which run between adjoining teeth. The biting surface is present, but there is nothing under that surface and above the gum line. Therefore, there is a problem of how best to clean under the bridge and against adjacent teeth. Of course, there are many other places where similar interdental brushing problems may occur. Such brushes are shown, for example, in U.S. Patent Nos. 3,559,226; 4,222,143; 4,387,479, and others.

When travelling or away from home, it is often inconvenient to carry and use long handled interdental brushes of the types shown in the above cited patents. Therefore, small portable devices are available which fit easily into a pocket or purse. These devices often have two parts which include a handle, a brush integral with the handle, and a cover that slips over the brush. Usually, the brush and handle are about two-inches long, with a twisted wire brush projecting out the end of the handle. One such product is marketed by Denticator Company, Inc., of Brisbane, California, under the name "Spirex V" compact bridge and space brush.

The handle and brush of the prior art devices are generally a rigid unit; therefore, use of the unit is similar to holding a pencil of a comparable length and projecting it into the back of the mouth, while trying to fit the point into a gap under a bridge or between adjacent teeth. This kind of rigidity may require an extension of the cheek or the use of two hands.

Once the gap is found, the brushing must occur without a loss of gap orientation unless one is willing to go through the process of finding the gap again. Also, if one brushes too vigorously and loses the gap while doing so, he may jab himself in the gum or tooth and also bend the wire stem brush. Thus, interdental cleaning may be difficult to perform, especially where visual contact is not easy to achieve.

Accordingly, an object of the invention is to provide an interdental toothbrush having a handle and a brush with a twisted wire characterized by the handle having a first portion and a second portion, said first portion being flexible, and a second portion being relatively rigid, the brush twisted wire stem being embedded in at least said first portion of the handle and projecting from said first portion in axial alignment with the handle, said first portion having a cross-section less than the cross-section of the second portion and of such flexibility that with a small amount of finger pressure, said first portion flexes to move said brush at an angle to the handle axis to enable said brush to be inserted between teeth in hard to reach places.

In keeping with the invention, there is provided an interdental brush having a handle with a flexible neck or first portion and a less flexible second portion. The dimensions of the brush and handle are such that a small amount of finger pressure upon the neck region causes the tip of the brush to deflect, bend or flex to a convenient brushing angle. The flexibility can be either plastic or resilient. After use, the neck may be straightened from the deflected position. The brush may be repeatedly bent and straightened for repeated use. Furthermore, it may be bent at different angles to afford access to different areas of the mouth. Thus, during brushing, one side of the interdental space may be brushed by slightly increasing the deflection responsive to an added finger pressure and the other side of the space may be brushed responsive to decreasing the deflection by reduced finger pressure. If need be, the brush may be rolled between the fingers to enable the finger tip to help straighten or to change the angle of the tip. Thus, the brushing itself may be accomplished by slight movements of the finger tip and thumb.

A preferred embodiment of the invention is shown in the attached drawing in which:  
 Fig. 1 is a side elevation of the inventive brush and cap, as it might be viewed by the user;  
 Fig. 2 is a side elevation, partly in cross section showing the inventive brush and cap;  
 Figs. 3—6 are end views taken along lines 3—3 to 6—6 respectively, of Fig. 2;  
 Fig. 7 is an assembled showing of the cap and brush, as they appear while the brush is being carried in packet or purse, for example;

Fig. 8 shows the brush in operation, illustrating how the brush is deflected responsive to finger pressure;

Fig. 9 shows an alternative embodiment of the invention shown in Figs. 1—7;

Fig. 10 is a side elevation of an embodiment of the invention, with the top partially broken away to show internal grooves within the cap, with the cap closed over the handle;

Fig. 11 is a side elevation also showing the embodiment of Figure 10 with the cap on the bottom of the handle extending the length thereof; and

Fig. 12 is a cross sectional view of the cap of Figure 1 also showing an enlarged portion showing internal longitudinal ribs.

The brush of Figs. 1 and 8 includes a handle 20 and a cap 22. The cap 22 is a cylindrical member, having one end 23 closed. The other end 24 is open and slips over the brush handle 20 with friction fit (as best seen in Fig. 7). Optionally, one or more vents 21 may be provided in the cap to facilitate drying of the brush after use. A reduction in internal diameter, such as annular stop 25, limits the distance which the cap 22 may be slipped over the end of handle 20 and, therefore, protects the brush 26 from the cap being jammed downwardly. Internal ribs 29 (Fig. 12) run longitudinally within the cap 22 to provide added friction for

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holding the cap in place on the handle 20. The added holding forces occur because it is impossible to mold plastic with a completely circular interior to close enough tolerances to always fit snugly. With the longitudinal ribs, the cover will stretch slightly between the ribs on undersized tolerances and yet the unstretched cap still holds on oversized tolerances. This holding force is especially important if it is necessary to cover the brush after use and while it is still wet, when there could be a tendency for the cap to slip off the handle.

In the embodiment of Fig. 2 the internal diameter of the cap is uniform throughout the distance from the step 24 to the closed end 23 to give a smooth internal wall. It is desirable for the outside of the handle 20 and cap 22 to be serrated with longitudinal ribs so that they may be better manipulated by a person with wet hands. These ribs add friction, in the mold between the cap 22 and walls of the cavity in which it was formed.

Therefore, when the male member of the mold parts is opened, it often slipped out of the cap 22 with the smooth internal wall, thus leaving the cap 22 trapped inside the female member of the mold. This required a knock-out pin which would leave unsightly marks on the cap. To avoid this problem the male mold part is given a plurality of circumferential grooves to form a number of ribs 25a, inside the cap 22. When the male part of the mold is open, these ribs and grooves are engaged to provide enough holding forces to overcome the friction between the cap 22 and the female mold part. Thereafter the cap 22 may be knocked off the male part since the depth of the grooves (or the height of the ribs 25a) is very shallow. To help with the knock-off without causing a blemish on the cap, a smooth surfaced flange 24a is provided for on the bottom of the cap. This flange also provides a controlled amount of resistance to a flaring of the open end (i.e., it acts somewhat as a rubberband would act to hold the cap 22 in place).

Handle 20 has a brush 26 of any suitable design on a twisted wire stem 32 projecting longitudinally from the handle 20. The opposite end 27 of handle 20 is solid. When the cap 22 is in place on the handle 20, the brush 26 is kept clean and sanitary. When the cap 22 is placed on the opposite end of the handle 20, the handle is made longer. The internal ribs 29 help secure the cap 22 on the opposite end of the handle 20 so that, together, they provide a more secure tool which may be gripped with greater ease within the hand and braced against the palm at the fleshy fold 34 between the thumb and the index finger. The stop 25 limits the distance that the end of the handle 20 extends onto the cap 22.

The handle 20 is a solid member which is approximately a quarter-inch in diameter (.635 cm), for a distance A, which may be about one-inch (2.54 cm). Beginning at shoulder 28, the diameter of a tip end 33 gradually reduces over a distance, which may be about one-quarter inch (.635 cm), to an outer tip 31, which is also approximately one-quarter inch (.635 cm) in length and an eighth-inch (.32 cm) in diameter. The wire stem 32 is exposed over a distance between the top of tip end 31 and the bottom of brush 26 which is about one-sixteenth of one-inch (.16 cm).

The wire stem 32 of brush 26 extends through and is embedded in the tip end 33 and handle of the molded part. This wire stem continues for a substantial distance into the full diameter section of handle 20, as shown, for example in Fig. 2. Preferably, the brush stem 32 is molded into the plastic of the handle at the time when the handle is made. To aid in preventing the brush from being pulled out of the handle, the end of the wire may be bent or crimped, as shown at 36 in Fig. 9.

Longitudinal ribs 38 are provided in the handle 20 and the cap 22. These ribs enhance the aesthetic appearance of the product and give the handle and cap a better feel to the user. The ribs also aid in removal of the cap from the handle, particularly after the brush has been used.

In order to achieve a desired flexing characteristic, the handle 20 is preferably made from a mixture of a thermoplastic elastomer, polymer material and a polypropylene of a general purpose homopolymer grade. More particularly, in one embodiment which was constructed and found satisfactory, the handle was made of approximately 80% "C-Flex" and 20% "Polypropylene #5820".

The "C-Flex" material is manufactured by Concept Polymer Technologies, Inc. of 12707 U.S. 19 South, Clearwater, Florida 33546. In its technical data sheets, the manufacturer reports that "C-Flex" has the following properties.

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	ASTM method	C-Flex 42-3500	C-Flex 42-3510	C-Flex 42-3515
Mechanical properties				
5 Durometer hardness	D-2240	50A	65A	70A
Tensile str. break PSI (MPa) @ 23°C	D-412	1650 (11.3)	1780 (12.46)	1900 (13.3)
10 Tensile modulus				
PSI (MPa) at 100%	D-412	175 (1.22)	330 (2.31)	340 (2.38)
PSI (MPa) at 300%	D-412	310 (2.17)	540	650
15 Tensile—set % (5) after break	D-412	55	100	43
Elongation % at break @ 23°C	D-412	850	800	790
20 Compression set at 70°C	D-395	72	66	70
Tear strength— method-die C lbs/in (MPa)	D-624	130 (.91)	183 (1.28)	220 (1.54)
25 Specific gravity ±.02	D-792	.90	.90	.90
Water absorption (5) at 73°F				
1 week at 50% RH	D-570	.14	.27	.30
1 week at 100% RH	D-570	.42	.26	.17
30 Thermal properties				
Brittle temperature	D-746	-100°F (-73°C)	-100°F (-73°C)	-100°F (-73°C)
Melt Index-Cond. E	D-1238	.25	1.9	1.8
35 Electrical properties				
Dielectric strength (volts/mil)		450	740	800
40 Volume resistivity (10 <sup>16</sup> ohm-cm)		1.2	3.0	0.8
Surface resistivity (10 <sup>15</sup> ohm)		3.6	3.6	2.6
45 Dielectric constant				
(10 <sup>2</sup> Hz)		2.33	2.27	2.27
(10 <sup>3</sup> Hz)		2.33	2.27	2.27
(10 <sup>6</sup> Hz)		2.31	2.27	2.15
50 Dissipation factor				
(10 <sup>2</sup> Hz)		0.0004	0.0002	0.0002
(10 <sup>3</sup> Hz)		0.0006	0.0002	0.0002
(10 <sup>6</sup> Hz)		0.0022	0.0008	0.0008

55 Polypropylene #5820 (12 melt) is manufactured by the Shell Chemical Company, having an address at 1415 West 22 Street, Oak Brook, Illinois 60521. The manufacturer of this product describes its physical properties as follows:

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Traditional property	ASTM units	SI units	Test
Melt flow	12 g/10 min	12 g/10 min	D 1238 <sup>1</sup>
5 Density at 23°C	0.903 g/cc	0.903 g/cc	D 1505
Tensile yield strength, at 2.0 in/min (5.08 cm/min)	35 MPa	5100 psi	D 638 <sup>2</sup>
10 Yield elongation at 2.0 in/min (5.08 cm/min)	10%	10%	D 638 <sup>2</sup>
15 1% Secant modulus, at 0.2 in/min (5.08 cm/min)	1375 MPa	200,000 psi	D 638 <sup>2</sup>
Flexural modulus, at 0.05 in/min (.13 cm/min) 2 in (5.08 cm) span	1500 MPa	220,000 psi	D 790A <sup>2</sup>
20 Notched Izod impact strength, at 73°F/23°C at 0°F/-18°C	27 J/m 20 J/m	0.5 ft-lb/in 0.4 ft-lb/in	D 256 <sup>2</sup> D 256 <sup>2</sup>
25 Hardness, Rockwell	R95	R95	D 785
Heat deflection temp at 66 psi/455 kPa	104°C	220°F	D 648
30 Vicat softening temp	152°C	305°F	D 1525

<sup>1</sup> Condition L, 230°C, 2160 g

<sup>2</sup> ASTM Type 1 specimen, 1/8" (.32 cm) thick (injection molded)

35 Shell further describes this product as being a high flow, general purpose material suitable for injection molding of intricate parts where long flow paths are involved. An antistat component reduces electrical charges during processing and subsequent storage, thereby reducing dust pickup. The manufacturer claims that the product has an excellent flex life, good chemical and solvent resistance, high strength-to-weight ratio, and exceptional stress cracking resistance.

40 Both of these materials meet exacting Federal standards for bio-medical use and for making direct contact with food.

To further control the amount of flexing which may occur in the neck region 33, 31, the diameter of wire stem 32 may be either increased or decreased somewhat and the diameter and length of the neck region 33, 31 may be modified. It is thought that those who manufacture the inventive brush will determine the best diameters and lengths for themselves and for their own particular needs. In general, the wire stem of a  
45 conventional interdental brush may be increased in diameter in the approximate range of 10—50%.

The method of using the inventive brush is shown in Fig. 8. The length of handle 20 is such that, when the tip end 33 is held between the thumb and index finger, the opposite end of the handle is captured and stabilized along the length of the finger. Or, if the cap is in place on the end of the brush, its end might be captured in or near the palm of the hand, as in the fleshy fold 34, which is between the thumb and index  
50 finger. By pressing the index finger against the outer tip 31 and tip end 33 while holding the handle 20 by the thumb, it is possible to deflect, bend, or flex, the brush to point, more or less, in line with the finger tip. If the user wishes to point the brush in another direction, the handle may be rolled between the thumb and index finger or a small amount of thumb pressure may be applied to the brush to straighten it or bend it to the other position. Thus, the flexed angle of the brush may be varied, at the will of the user.

55 It is relatively easy to permit one's finger at an object since the sense of touch tends to assist the pointer. This makes the invention easy to use. On the other hand, it is more difficult to point an instrument with a relatively long handle since the instrument may be held at almost any angle and since the user cannot always take advantage of the sense of touch to tell the user where the tip end of the long handled brush is located. Moreover, none of the existing long-handled or other interdental brushes have flexible tip  
60 ends similar to the inventive brush so their tip ends cannot be deflected as in the inventive brush. While the tip end is held and deflected, as seen in Fig. 8, use of the instrument is much more like pointing a finger since the method of bending inherently tends to align the brush with the finger. This is an important advantage over the prior interdental brushes.

65 Another factor is that, when the brush is held in the hand as seen in Fig. 8, it is much easier to place the brush in the space between the teeth in the back of the mouth as compared to attempting to position it

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when the brush is straight, as seen in Fig. 1, because the natural curvature of the hand in this position is most appropriate to reaching into that back of the mouth space. An advantage is that the portion of the wire brush encased in plastic is more resistant to breaking from repeated or excessive bending than would be the case if the wire were exposed.

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### Claims

1. An interdental toothbrush having a handle and a brush with a twisted wire characterized by the handle (20) having a first portion (31, 33) and a second portion (A), said first portion being flexible, and a second portion being relatively rigid, the brush twisted wire stem (32) being embedded in at least said first portion of the handle and projecting from said first portion in axial alignment with the handle, said first portion (31, 33) having a cross-section which is smaller than the cross-section of the second portion (A) and of such flexibility that with a small amount of finger pressure, said first portion flexes to move said brush (26) at an angle to the handle axis to enable said brush to be inserted between teeth in hard to reach places.

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15 2. The interdental toothbrush of claim 1 characterized in that the length of the handle (20) is such that said second portion (A) of said toothbrush handle is captured along the length of the finger when said first portion is held by the thumb and a finger.

3. The interdental toothbrush of claim 2 characterized in that said first portion (31, 33) is approximately one-half inch (1.27 cm) long and tapers (33) for approximately one-quarter inch (.635 cm) from said second portion (A) to about one-eighth inch (.32 cm) diameter, and then extending (31) with a substantially uniform diameter for approximately one-quarter inch (.635 cm).

20 4. The interdental toothbrush of claim 3 characterized in that said twisted wire brush stem (32) has a diameter which is selected to provide the desired flexibility.

5. The interdental toothbrush of any one of claims 1 to 4 further characterized by cap means (22) for covering said first portion and said twisted wire brush.

25 6. The interdental toothbrush of claim 5 characterized in that the cap means (22) includes at least one internal longitudinal rib (29) for adding friction to secure the cap when in place over the handle.

7. The interdental toothbrush of claim 5 or 6 characterized in that the cap (22) has at least one internal circumferential rib (25a).

30 8. The interdental toothbrush of any one of claims 5 to 7 characterized in that said cap means (22) are adapted to receive the second portion (A) of the handle when the cap is removed from the first portion (31, 33) to provide a handle extension and means (25, 25a, 29) are provided in said cap means for limiting movement of the second portion when it is inserted in the cap.

35 9. The interdental toothbrush of claim 8 characterized in that the length of the handle (20) is such that said second portion (A) is captured in approximately the palm of the hand when said first portion (31, 33) is held by the thumb and a finger.

10. The interdental toothbrush of any one of claims 5 to 9 characterized in that the second portion (A) of the handle and the cap (22) are provided with external longitudinal ribs (38) extending along a major portion of their lengths.

40 11. The interdental toothbrush of any one of claims 1 to 10 characterized in that said handle is made from a composition of approximately 80% of a thermoplastic elastomer polymer and approximately 20% of a general purpose polypropylene.

### Patentansprüche

45

1. Zahnbürste für Zahnzwischenräume mit einem Griff und einer Bürste aus einem verdrehten Draht, dadurch gekennzeichnet, daß der Griff (20) einen ersten Abschnitt (31, 33) und einen zweiten Abschnitt (A) umfaßt, wobei der erste Abschnitt biegsam und der zweite Abschnitt relativ starr ist, wobei der aus verdrehtem Draht bestehende Bürstenstiel (32) in wenigstens den ersten Abschnitt des Griffs eingebettet ist und aus dem ersten Abschnitt axial zum Griff herausragt, wobei der erste Abschnitt (31, 33) einen Durchmesser aufweist, der kleiner ist als der Durchmesser des zweiten Abschnitts (A) und so biegsam ist, daß sich bei leichtem Fingerdruck der erste Abschnitt biegt, so daß die Bürste (26) in einem Winkel zur Griffachse bewegt wird, damit die Bürste an schwierig zu erreichenden Stellen zwischen den Zähnen eingesetzt werden kann.

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55 2. Zahnbürste für Zahnzwischenräume nach Patentanspruch 1, dadurch gekennzeichnet, daß die Länge des Griffs (20) so gewählt ist, daß der zweite Abschnitt (A) des Zahnbürstengriffs am Finger anliegt, wenn der erste Abschnitt zwischen Daumen und Zeigefinger gehalten wird.

3. Zahnbürste für Zahnzwischenräume nach Patentanspruch 2, dadurch gekennzeichnet, daß der erste Abschnitt (31, 33) etwa einen halben Inch (1.27 cm) lang ist und sich ab dem zweiten Abschnitt (A) über etwa ein Viertel Inch (0.635 cm) auf einen Durchmesser von ein Achtel Inch (0.32 cm) verjüngt (33) und sich dann mit im wesentlichen gleichbleibendem Durchmesser über etwa ein Viertel Inch (0.635 cm) erstreckt (31).

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65 4. Zahnbürste für Zahnzwischenräume nach Patentanspruch 3, dadurch gekennzeichnet, daß der aus verdrehtem Draht bestehende Bürstenstiel (32) einen so gewählten Durchmesser hat, daß die gewünschte Biegsamkeit gewährleistet ist.

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5. Zahnbürste für Zahnzwischenräume nach einem der Patentansprüche 1 bis 4, gekennzeichnet durch eine Kappe (22), die den ersten Abschnitt und die Bürste aus verdrehtem Draht abdeckt.

6. Zahnbürste für Zahnzwischenräume nach Patentanspruch 5, dadurch gekennzeichnet, daß die Kappe (22) wenigstens eine innere Längsrippe (29) umfaßt, die die über dem Griff befindliche Kappe durch zusätzliche Reibung festhält.

7. Zahnbürste für Zahnzwischenräume nach Patentanspruch 5 oder 6, dadurch gekennzeichnet, daß die Kappe (22) wenigstens eine innere ringförmige Rippe (25a) umfaßt.

8. Zahnbürste für Zahnzwischenräume nach einem der Patentansprüche 5 bis 7, dadurch gekennzeichnet, daß die Kappe (22) geeignet ist, den zweiten Abschnitt (A) des Griffs aufzunehmen, wenn die Kappe von dem ersten Abschnitt (31, 33) entfernt wird, um eine Griffverlängerung zu bilden, und daß in der Kappe Einrichtungen zur eingeschränkten Bewegung des zweiten Abschnitts vorgesehen sind, wenn dieser sich in der Kappe befindet.

9. Zahnbürste für Zahnzwischenräume nach Patentanspruch 8, dadurch gekennzeichnet, daß die Länge des Griffs (20) so gewählt ist, daß der zweite Abschnitt (A) etwa von der Handfläche ergriffen wird, wenn der erste Abschnitt (31, 33) von Daumen und Zeigefinger gehalten wird.

10. Zahnbürste für Zahnzwischenräume nach einem der Patentansprüche 5 bis 9, dadurch gekennzeichnet, daß der zweite Abschnitt (A) des Griffs und die Kappe (22) mit äußeren Längsrippen (38) versehen sind, die sich über den größten Teil ihrer Länge erstrecken.

11. Zahnbürste für Zahnzwischenräume nach einem der Patentansprüche 1 bis 10, dadurch gekennzeichnet, daß der Griff aus einer Zusammensetzung von etwa 80% eines thermoplastischen elastomeren Polymers und etwa 20% eines Allzweckpolypropylens besteht.

### Revendications

1. Brosse à dents interdentaire pourvue d'une poignée et d'une brosse avec un fil torsadé, caractérisée par une poignée (20) ayant une première portion (31, 33) et une seconde portion (A), la dite première portion étant flexible, et la seconde portion étant relativement rigide, la tige du fil torsadé de brosse (32) étant noyée dans au moins la dite première portion de la poignée et se projetant de la dite première portion en alignement axial avec la poignée, la dite première portion (31, 33) ayant une section transversale qui est inférieure à la section transversale de la seconde portion (A) et d'une flexibilité telle que, d'une petite pression du doigt, la dite première portion fléchisse afin de déplacer la dite brosse (26) angulairement par rapport à l'axe de la poignée de façon à permettre à la dite brosse d'être insérée entre les dents dans des endroits difficiles à atteindre.

2. Brosse à dents interdentaire selon la revendication 1, caractérisée en ce que la longueur de la poignée (20) est telle que la seconde portion (A) de la dite poignée de brosse à dents est prise le long du doigt lorsque la dite première portion est maintenue par le pouce et un doigt.

3. Brosse à dents interdentaire selon la revendication 2, caractérisée en ce que la dite première portion (31, 33) fait approximativement un demi pouce (1,27 cm) de long, s'effile (33) sur approximativement un quart de pouce (0,635 cm) depuis la seconde portion (A) jusqu'à environ un huitième de pouce (0,32 cm) de diamètre, et s'étend ensuite avec un diamètre sensiblement uniforme sur approximativement un quart de pouce (0,635 cm).

4. Brosse à dents interdentaire selon la revendication 3, caractérisée en ce que la dite tige de brosse en fil torsadé (32) présente un diamètre qui est choisi de façon à procurer la flexibilité désirée.

5. Brosse à dents interdentaire selon l'une quelconque des revendications 1 à 4, caractérisée en outre par des moyens formant capuchon (22) destinés à recouvrir la dite première portion et la dite brosse en fil torsadé.

6. Brosse à dents interdentaire selon la revendication 5, caractérisée en ce que les moyens formant capuchon (22) comprennent au moins une nervure longitudinale interne (29) afin d'apporter une friction pour fixer le capuchon lorsqu'il est en place sur la poignée.

7. Brosse à dents interdentaire selon la revendication 5 ou 6, caractérisée en ce que le capuchon (22) présente au moins une nervure circonférentielle interne (25a).

8. Brosse à dents interdentaire selon l'une quelconque des revendications 5 à 7, caractérisée en ce que les dits moyens formant capuchon (22) sont prévus pour recevoir la seconde portion (A) de la poignée lorsque le capuchon est ôté de la première portion (31, 33) afin de fournir une extension de poignée et en ce que des moyens (25, 25a, 29) sont prévus dans les dits moyens formant capuchon afin de limiter le mouvement de la seconde portion lorsqu'elle est insérée dans le capuchon.

9. Brosse à dents interdentaire selon la revendication 8, caractérisée en ce que la longueur de la poignée (20) est telle que la seconde portion (A) est prise approximativement dans la paume de la main lorsque la dite première portion (31, 33) est maintenue par le pouce et un doigt.

10. Brosse à dents interdentaire selon l'une quelconque des revendications 5 à 9, caractérisée en ce que la seconde portion (A) de la poignée et le capuchon (22) sont pourvus de rainures longitudinales externes (38) s'étendant sur une majeure de leurs longueurs.

11. Brosse à dents interdentaire selon l'une quelconque des revendications 1 à 10, caractérisée en ce que la dite poignée est faite à partir d'une composition d'approximativement 80% d'un polymère élastomère thermoplastique et approximativement 20% d'un polypropylène d'usage courant.

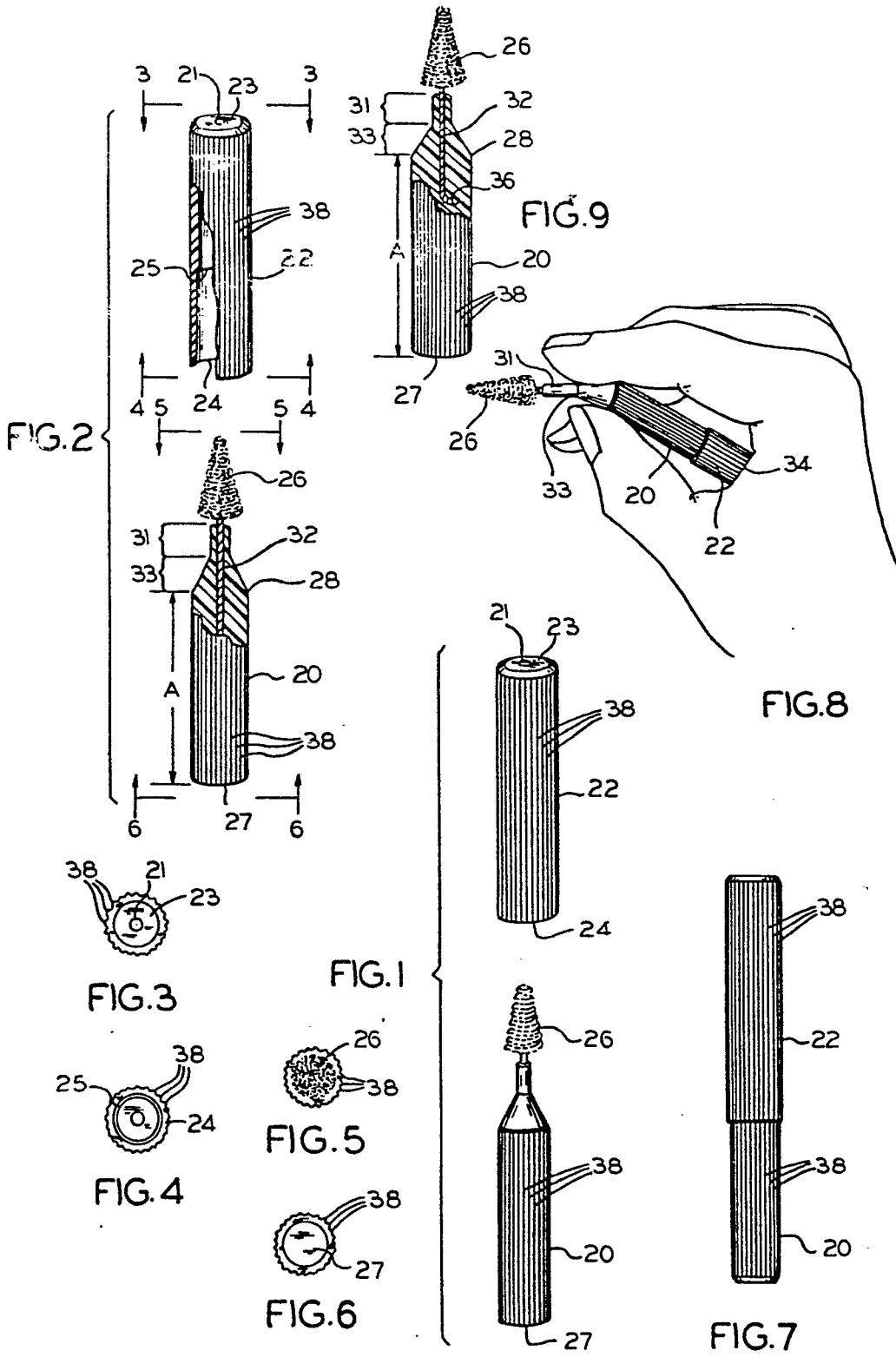




FIG.12

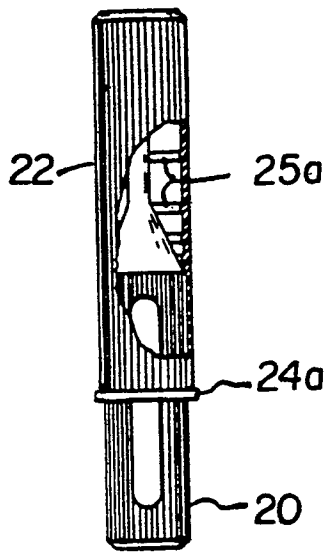
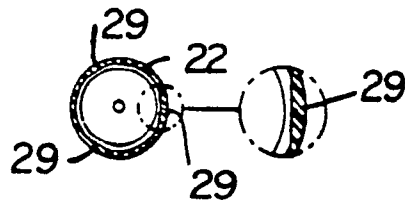


FIG.10

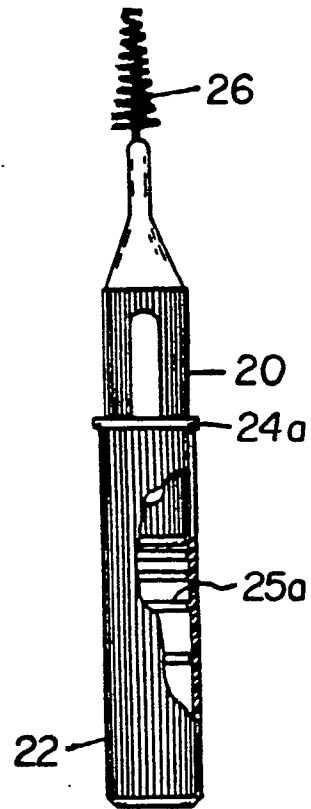


FIG.11