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(54) **Interdental toothbrush**

Interdentale Zahnbürste

Brosse à dents interdentale

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EP 0 680 707 B2

Description

[0001] The present invention refers to a an interdental toothbrush which comprises a head made up of filaments laid out in a substantially radial direction on a core or stem.

BACKGROUND OF THE INVENTION

[0002] Known in the art are brushes for cleaning the teeth, and in particular for cleaning the interdental spaces, of the type described.

[0003] Spanish utility model 262 453 refers to an interdental toothbrush in which the filaments are secured to a wire core and are laid out radially around said core. The filaments make up a cylindrical head around the core of small diameter.

[0004] Thanks to the small size of the core, the filaments can be inserted easily into the interdental spaces for cleaning of same, which is not possible with a conventional brush in which the filaments are attached to a handle of much larger dimensions than the aforesaid core of the interdental toothbrush.

[0005] All the filaments are of the same section, and as they are of the same length they present identical resistance to bending when the head is pressed against the teeth while they are brushed.

[0006] Also known are interdental toothbrushes (see e.g. US-A-4 691 404) whose head is of conical or frustoconical shape. In this case, as the filaments are of the same thickness, the shortest ones present greater resistance to bending, that is, they present a sensation of greater hardness on the teeth and gums. Excessively hard filaments give an unpleasant sensation and can even damage the gums.

[0007] WO 93/05679 refers to an interdental toothbrush having a head with zones made up of filaments of different thicknesses. Some of the head embodiments are conical or frustoconical shape where the filaments of lower thickness correspond to a zone of the head where the filaments are shorter.

[0008] These different lengths and thickenesses intend to obtain outstanding hygienic results in cleaning the interdental spaces and to avoid the stem to hurt the gum or the teeth enamel.

[0009] These results are obtained by means of longer filaments in the first section and shorter filaments in the central section, because the longer filaments of the first section prevent that a direct contact of the stem with teeth and gum take place, since the filaments abut on the teeth sides.

DESCRIPTION OF THE INVENTION

[0010] The interdental toothbrush of the invention solves the disadvantages mentioned.

The interdental toothbrush of the invention is characterized in that the different zones of the head are of different colours so that the different zones provided with filaments of different thicknesses can be distinguished.

[0011] Preferably, these colours will be white and black, the former detecting the presence of blood and the latter detecting the presence of bacterial plaque.

[0012] The ratio between the length and the thickness of the filaments in the various zones is preferably such that the hardness is substantially uniform over the entire head. This allows the unpleasant sensation due to excessive hardness, which can damage the gums, to be avoided.

[0013] In a preferred embodiment of the invention, the head has a conical or frustoconical shape and the filaments of lower thickness, which make up one of the zones of the head are also shorter.

[0014] The fact that there exist two or more zones with filaments of different thickness means that zones of different hardness can be obtained, especially if the filaments of the head are of the same length.

[0015] This happens when the head has a substantially cylindrical shape. In this embodiment, the desired sensation of hardness can be achieved at different zones of the head.

[0016] The thickness of the filaments is preferably between 1 and 9 mils, that is, between 1 and 9 thousandths of an inch, which is equivalent to between 0.0254 and 0.2286 mm.

[0017] Advantageously, the core or stem is flexible; this facilitates the cleaning of the rear parts, because the core can be bent to form the most appropriate angle.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] For a better understanding of all that has been set out, some drawings are attached in which, schematically and solely by way of non-restrictive example, a practical embodiment of the toothbrush is shown.

[0019] Figure 1 shows in detail a head of the interdental toothbrush of the invention, on which two zones with filaments of different thicknesses can be observed; figure 2 shows a head of cylindrical shape showing schematically three zones with filaments of different thicknesses; figure 3 shows a head of frustoconical shape showing schematically two zones with filaments of different thicknesses; and figure 4 shows the brush according to the invention during its use.

DESCRIPTION OF PREFERRED EMBODIMENTS

[0020] Figure 1 shows the head 1 of an interdental toothbrush 2 made of up filaments 3,4 laid out in a substantially radial direction on a flexible-core or stem 5 attached to a handle 6.

[0021] The head 1 is protected by a cover or hood 7, shown by a broken line, which is fitted onto a lower section 8 of the handle 6.

[0022] In the embodiment of figure la, the right-hand zone of the head 1 is made up of filaments 3 of greater

thickness than the filaments 4 of the left-hand zone of the head 1.

[0023] It is thus possible to achieve the desired sensation of hardness in various zones of the head 1.

[0024] The flexibility of the core or stem 5 facilitates the cleaning of the rear parts, since the core 5 can de bent to form the most appropriate angle.

[0025] Figure 2 shows another head 9, also of cylindrical shape, in which three zones, A, B and C, have been marked with different shading to represent schematically three zones with filaments of different thicknesses.

[0026] Figure 3 shows a head 10 of frustoconical shape in which two zones, D and E, have been marked with different shading to represent schematically two zones with filaments of different thicknesses.

[0027] The filaments of lower thickness which form zone D of the head 10 are also shorter, thus achieving substantially uniform hardness at all zones D and E of the head 10.

[0028] Figure 4 shows the brush of the invention in use, the head 9 of the brush being inserted between the teeth at the base thereof, so that the head 9 is in contact with the gum; this allows the presence of blood and of bacterial plaque to be detected. This presence is easy to detect because the different zones are of different colours, preferably black and white.

Claims

1. Interdental toothbrush which includes a head (1, 9, 10) formed by filaments (3,4) arranged in a substantially radial direction on a core or stem (5), the head (1, 9, 10) including zones made up of filaments (3,4) of different thicknesses, **characterized in that** the different zones of filaments (3, 4) of different thicknesses in the head (1, 9, 10) are of different colours.

2. Interdental toothbrush according to claim 1, **characterized in that** the colours are white and black, the former detecting the presence of blood and the latter detecting the presence of bacterial plaque.

3. Interdental toothbrush according to claim 1, **characterized in that** the ratio between the length and the thickness of the filaments in the various zones (D,E) is such that the hardness is substantially uniform over the entire head (10).

4. Interdental toothbrush according to claim 1, **characterized in that** the head (10) has a conical or frustoconical shape and the filaments (3,4) of lower thickness which make up one of the zones (D) of the head (10) are also shorter.

5. Interdental toothbrush according to claim 1, **characterized in that** the head (10) has a cylindrical shape.

6. Interdental toothbrush according to claim 1, **characterized in that** the thickness of the filaments (3,4) is preferably between 1 and 9 mils (between 0.0254 and 0.2286 mm).

7. Interdental toothbrush according to any of the preceding claims, **characterized in that** the core or stem (5) is flexible.

Patentansprüche

1. Interdentale Zahnbürste mit einem Kopf (1, 9, 10), der durch Filamente (3, 4) gebildet ist, die in im wesentlichen radialer Richtung auf einem Kern oder Stiel (5) angeordnet sind, wobei der Kopf (1, 9, 10) Bereiche aufweist, die mit Filamenten (3, 4) unterschiedlicher Dicken ausgestattet sind,
dadurch gekennzeichnet, dass
die unterschiedlichen Bereiche von Filamenten (3, 4) unterschiedlicher Dicken in dem Kopf (1, 9, 10) unterschiedliche Farben aufweisen.

2. Interdentale Zahnbürste nach Anspruch 1, **dadurch gekennzeichnet, dass** die Farben weiß und schwarz sind, wobei die Vorgenannte die Gegenwart von Blut und die Nachstehende die Gegenwart von Bakterien detektieren.

3. Interdentale Zahnbürste nach Anspruch 2, **dadurch gekennzeichnet, dass** das Verhältnis zwischen der Länge und der Dicke der Filamente in den verschiedenen Bereichen (D, E) derart ausgebildet ist, dass die Härte über den gesamten Kopf (10) hinweg im wesentlichen einheitlich ist.

4. Interdentale Zahnbürste nach einem der Ansprüche 1 oder 2, **dadurch gekennzeichnet, dass** der Kopf (10) kegel- oder kegelstumpfförmig ausgebildet ist und dass die Filamente (3, 4) geringerer Dicke, welche einen der Bereiche (D) des Kopfes (10) bilden, zusätzlich kürzer sind.

5. Interdentale Zahnbürste nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der Kopf (10) zylinderförmig ist.

6. Interdentale Zahnbürste nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Dicke der Filamente vorzugsweise 0,0254 mm bis 0,2286 mm (1 mil bis 9 mils) beträgt.

7. Interdentale Zahnbürste nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der Kern oder Stiel (5) flexibel ausgebildet ist.

Revendications

1. Brosse à dents interdentaire du type comprenant une tête (1, 9, 10) formée par des filaments (3, 4) disposés selon une direction sensiblement radiale sur un noyau ou une tige (5), la tête (1, 9, 10) comportant des zones faites de filaments (3, 4) de différentes épaisseurs, **caractérisée en ce que** les différentes zones de filaments (3, 4) de différentes épaisseurs dans la tête (1, 9, 10) sont de différentes couleurs

2. Brosse à dents interdentaire selon la revendication 1, **caractérisée en ce que** les couleurs sont le blanc et le noir, le premier détectant la présence de sang et le second détectant la présence de plaque bactérienne.

3. Brosse à dents interdentaire selon la revendication 2, **caractérisée en ce que** le rapport entre la longueur et l'épaisseur des filaments dans les différentes zones (D, E) est tel que la dureté est sensiblement uniforme sur l'ensemble de la tête (10).

4. Brosse à dents interdentaire selon la revendication 1, **caractérisée en ce que** la tête (10) a une forme conique ou tronconique et **en ce que** les filaments (3, 4) de plus faible épaisseur qui forment l'une des zones (D) de la tête (10) sont également plus courts.

5. Brosse à dents interdentaire selon la revendication 1, **caractérisée en ce que** la tête (10) a une forme cylindrique.

6. Brosse à dents interdentaire selon l'une quelconque des revendications 1 à 4, **caractérisée en ce que** l'épaisseur des filaments est préférentiellement entre 1 et 9 mils (entre 0,0254 et 0,2286 mm).

7. Brosse à dents interdentaire selon l'une quelconque des revendications précédentes, **caractérisée en ce que** le noyau ou la tige (5) est flexible.

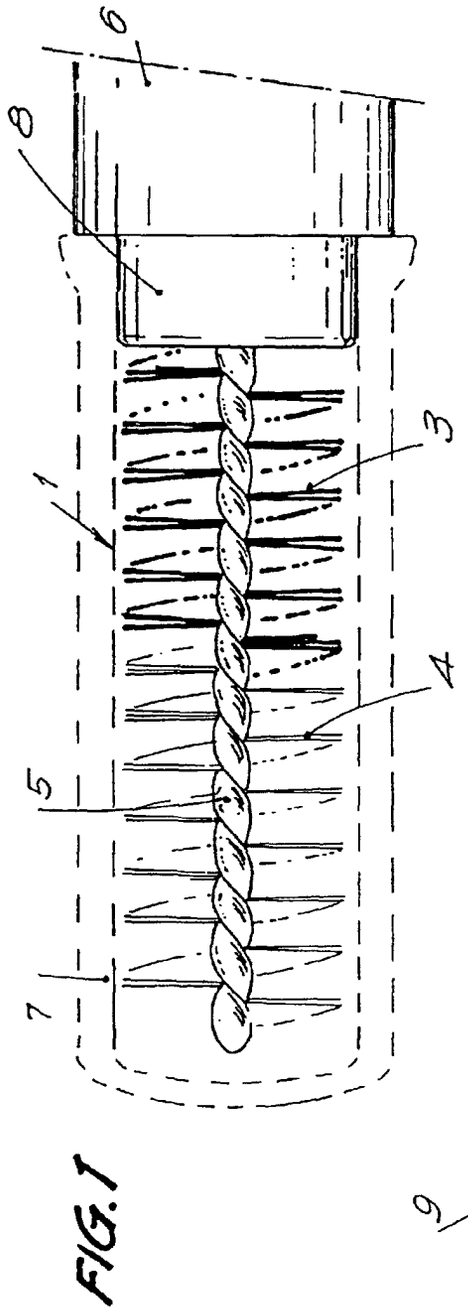

FIG.1

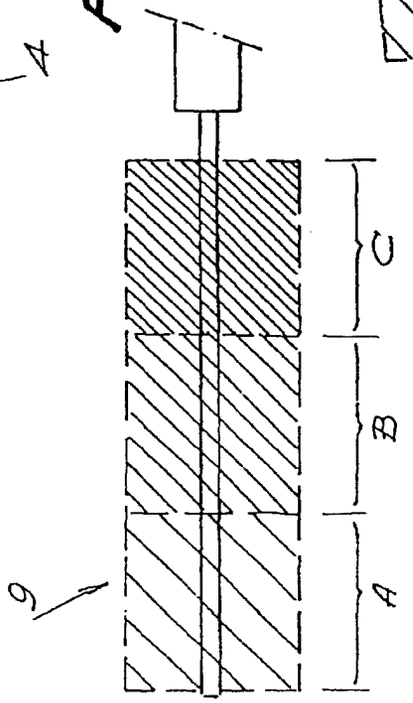

FIG.2

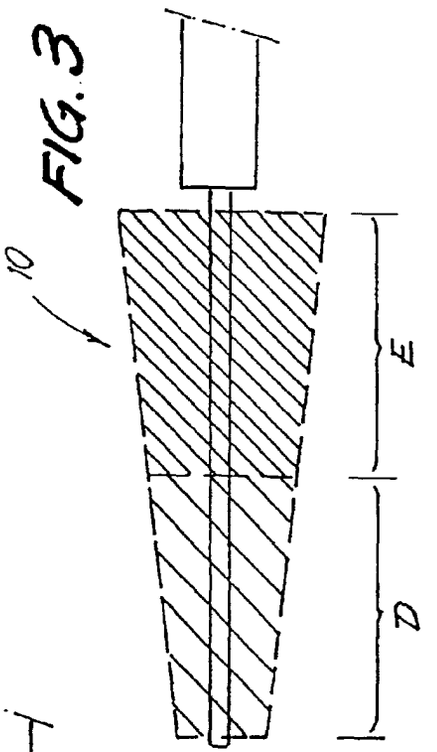

FIG.3

FIG. 4