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**Teeth cleaning means**

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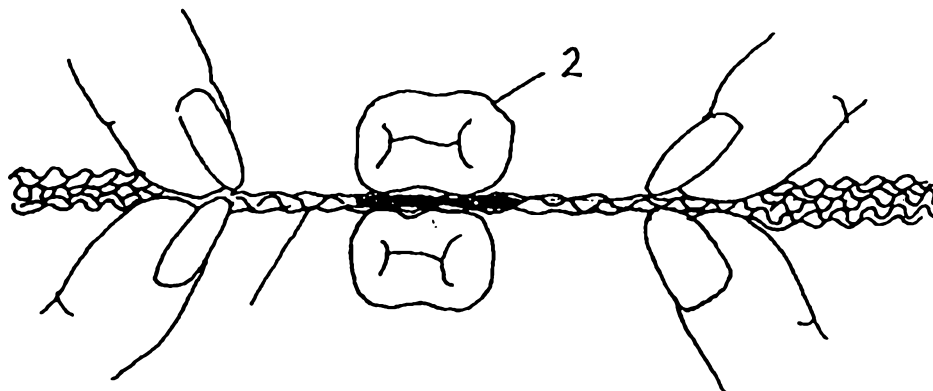
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<p>(21) Internationales Aktenzeichen: PCT/CH00/00265 (22) Internationales Anmeldedatum: 12. Mai 2000 (12.05.00)  (30) Prioritätsdaten: 925/99 15. Mai 1999 (15.05.99) CH  (71) Anmelder (für alle Bestimmungsstaaten ausser US): CORTEX HÜMBELIN AG [CH/CH]; Im Bifang 7, CH-5102 Rupper- swil (CH).  (72) Erfinder; und (75) Erfinder/Anmelder (nur für US): BUZZI, Carlo, A. [CH/CH]; Ankerstrasse 110, CH-8004 Zürich (CH).  (74) Anwalt: FELDMANN AG; Kanalstrasse 17, CH-8152 Glat- tbrugg (CH).</p>	<p>(81) Bestimmungsstaaten: AE, AG, AL, AM, AT, AT (Ge- brauchsmuster), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DE (Gebrauchsmuster), DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO Patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), eura- sisches Patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), europäisches 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>Veröffentlicht Mit internationalem Recherchenbericht. Mit geänderten Ansprüchen.</p>	

(54) Title: TEETH CLEANING MEANS

(54) Bezeichnung: ZAHNREINIGUNGSMITTEL



(57) Abstract

A teeth cleaning means is formed by technical textile processing of monofilament or multifilament threads. The threads are made of highly elastic synthetic material or latex. The threads are subjected to a technical textile processing method selected from amongst braiding, binding, doubling, weaving or drawing with the purpose of forming a shaped body having an abrasive surface on its structure. Said teeth cleaning means changes its cross-sectional area depending on the intensity of the tensile forces being exerted so that the teeth cleaning means can be easily inserted into the interproximate space of the teeth, can fill practically any interproximate space and bring about an abrasive effect therein.

(57) Zusammenfassung

Aus einem oder mehreren mono- oder multifilaren Fäden wird ein Zahnreinigungsmittel durch textiltechnische Verarbeitung gebildet. Hierbei sind die Fäden aus hochelastischem Kunststoff oder Latex gefertigt. Die Fäden werden textiltechnisch durch eines der Verfahren aus der Auswahl von Flechten, Knüpfen, Zwirnen, Weben oder Strecken zu einem Gebilde geformt, das durch seine Struktur eine abrasiv wirkende Oberfläche aufweist. Ein solches Zahnreinigungsmittel verändert seine Querschnittsfläche entsprechend der mehr oder weniger stark vorhandenen Zugkräfte, so dass das Zahnreinigungsmittel leicht in den Zahnzwischenraum einführbar ist und praktisch jeden beliebigen Zahnzwischenraum auch auszufüllen vermag und dort eine abrasive Wirkung erzeugen kann.

Tooth cleaning means

The present invention relates to a tooth cleaning means consisting of at least one monofilament or multifilament thread.

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Tooth cleaning means of the above mentioned type are known in many embodiment examples. In common language these are often known as dental floss. Mostly these tooth cleaning means consist of multifilament yarns in a waxed or unwaxed form. There are also known multifilament yarns as tooth clearing means which have a strong texturing and are accordingly greatly changeable in length.

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The above mentioned tooth cleaning means serves for cleaning tooth intermediate spaces from the remains of food or dental plaque. As is known the tooth intermediate spaces in the region of the chewing surfaces are mostly much smaller than in the region directly above the gum. The tooth cleaning means are accordingly formed such that that they may just be led through the narrow tooth intermediate space in order then in the wider region to be able to be able to unfold their cleaning effect. Since however the tooth cleaning means has a cross section which is considerably smaller than the tooth intermediate space present in this region, the cleaning effect is essentially dependent on the user guiding the tooth cleaning means along the surfaces to be cleaned. This is however neither particularly simple nor controllable. Added to this is the fact that an abrasive effect demands a certain spacial structure of the tooth cleaning means, and this structure is again an obstacle on introducing the tooth cleaning means into the region of the tooth intermediate spaces to be cleaned.

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This problem, until now has been counteracted in that one has offered tooth cleaning means, in particular dental cleaning floss of a varying thickness. A further hint of solving this problem was seen in offering tooth cleaning means which consist of multifilament yarns wherein the threads of the yarns are textured by way of a suitable method. By way of this these yarns in the unloaded condition have a considerably more voluminous cross section. Such tooth cleaning means are in particular used for cleaning below rigidly arranged tooth prostheses. With this the tooth cleaning means is pushed from the one side below a corresponding bridge and is pulled out at the other side. In contrast to other widespread dental floss thus a cleaning is not effected by a movement to and fro but by a one-off pulling-through of the tooth cleaning means. The abrasive effect at the same time is small. If one were to grasp this element on both sides and

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move it to and fro under tension, then in principle the texturing would fall away or be extended smooth by which means the volume is reduced and the abrasive effect which is in any case small is reduced even further.

5 In at least one embodiment, the present invention provides a tooth cleaning means which largely alleviates the previously mentioned disadvantages.

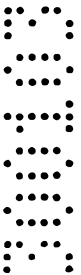
In a first aspect, the present invention provides an endlessly manufactured tooth cleaning means consisting of monofilament or multifilament threads, wherein the threads are  
10 highly-elastically stretchable and under the effect of tensile forces their cross sectional area reduce, characterised in that the monofilament or multifilament threads of high-elastic material are formed by way of textile processing, specifically by one of the methods from the selection of braiding, weaving or knitting, into a formation which has an abrasively acting surface, and that the threads by way of textile processing are connected amongst one another such that a  
15 severing is possible without the threads coming undone.

The effect is based on the fact that the monofilament or multifilament thread or threads with volumetric equality may be stretched to a multiple of its length, wherein the cross section is correspondingly reduced. On introducing the tooth cleaning means suitable force must be  
20 mustered in the form of tensile force and on the other hand the flanks of the teeth exert corresponding compression forces onto the tooth cleaning means to be introduced. The high-elastic monofilament or multifilament threads accordingly deform, wherein the cross sectional shape as well as the cross sectional area change. As soon as these forces reduce, which is automatically the case when the wider region of the tooth intermediate spaces has been reached  
25 then smaller forces are required and the cross section changes and the cross sectional surface is enlarged. By way of the textile processing of the thread or threads, the tooth cleaning means has a structure which practically according to the choice of the textile processing may effect a greater or lesser abrasive effect. The abrasive effect may furthermore be influenced by the shaping of the cross sectional surface at least of one monofilament thread. If such a  
30 monofilament thread for example has a polygonal cross sectional surface thus this shaping together with the changes of running direction resulting from the textile processing effects a structure which has a particularly favorable abrasive effect.

Further advantageous embodiment forms of the subject-matter of the invention are to be deduced from the dependent claims and their significance and manner of acting is explained in the subsequent description with reference to the accompanying drawings. There are shown in:  
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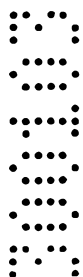
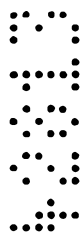
- Figure 1 the introduction of the tooth cleaning means according to the invention into a tooth intermediate space and
- Figure 2 the tooth cleaning means in the introduced condition;
- 5 Figure 3 a tooth cleanings means with cut connection locations in the unused condition;
- Figure 4 a tooth cleaning means of at least two threads and
- 10 Figure 5 such a tooth cleaning means of a single thread;



With regard to manufacturing technology the tooth cleaning means may be manufactured practically endlessly. At regular distances the formation of one or more thread which is manufactured by textile processing may be formed at relatively short distances into connection or separate locations. These connection or separation locations 3 may be manufactured by adhering, pressing or welding. The main object of these connection or separation locations lies in defining regions in which the endless product may be served without at the same time the textile formation coming apart. On the market at the same time the endless product may be offered with the connection locations at regular distances or also part pieces which are already separate at this region at this is represented in Figure 3. With the separation one would preferably apply an oblique cut which implies a leading through of the tooth cleaning means for example under a tooth bridge. At the same time of course which the endlessly manufactured product the part sections may be predefined by way of suitable perforation cuts or other formed break-off locations, and inspite of this offer an endless product, for example in the wound up condition.

Figure 4 is to be understood purely symbolically. With this it is to be merely shown that for example a tooth cleaning means 1 is manufacturable by connection in the end regions 3 wherein the one thread 4 may be manufactured or another product than the second thread 5. The difference between the two threads 4 and 5 may lie in the material selection or with the same material selection in the colouring. Such a coloured indication may for example as customer information fulfill an object. Thus according to colour code various thicknesses may be offered or the colour code may indicate also various application purposes, such as the cleaning of tooth intermediate spaces on the one hand or for the cleaning of intermediate spaces between the gums and the tooth bridge. The threads may however also be different in the structure. Whilst the one thread 4 for example may have a smooth surface, the other thread 5 may have a structured surface.

There also exists the possibility that the one thread has a round cross sectional shape whilst the other thread has a polygonal shape. These structure differences and cross sectional shape differences serve in particular for increasing or reducing the abrasive effect the connection of the two threads with regard to textile processing is not taken into account here. This of course to be effected beforehand. In a similar representation in Figure 5 there is shown a tooth cleaning means 1 which may be manufactured of a single thread 5 in a looped form. Here too then the two counter-running cord sections of the thread 4 may be connected to one another with regard to textile processing.



The selection of the colours however has considerable advantages for the user. If one used threads with a bright colour then one may recognise very quickly with these whether a bleeding of the gums is present. If one used threads with a dark colouring then on these one may easily recognise impurities. It is therefore advantageous for the user to use a tooth cleaning means which consists of a combination of in each case at least one bright and at least one dark colour tone.

If the tooth cleaning means is manufactured of a single thread then above all one considers as a textile processing the manufacture in the form of knotting and knitting as this for example represented in Figure 7 with which a single thread is represented in an considerably enlarged scale. With the use of two monofilament or multifilament threads as a textile processing method in particular doubling is to be considered. This is shown here in Figure 8. In Figure 9 in contrast there is represented a manufacturing method for three threads, wherein as a textile processing there is shown a braiding method here. This also is the case with the method shown in Figure 10, wherein here the tooth cleaning means is formed of four threads.

Of course also tooth cleaning means are to be considered which are manufactured of even more various or similar threads. It is however not meaningful to use too many threads in a very thin quality since then by way of this there finally arises a formation with regard to textile processing which practically has no structure which could still effect a meaningful abrasive operation.

In particular for cleaning below teeth bridges also more voluminous elements are to be considered. Thus tooth cleaning means for this purpose may also consist of a knitted fabric which not as with the forms represented here does not have a cord-like structure but has a wick or tubing shape. Finally it is of course also possible to coat the whole tooth cleaning means or also only individual threads with tooth or gum care means. Such means are known on the market in large amounts and with the manufacture of the threads may be applied without problem.

Finally it is yet to be pointed out that apart from the already mentioned possibilities of the manufacture of the connection locations by adhering, pressing or melting there yet also exists the possibility of creating such connections by third materials which may be deposited in this region.



Purely by way of example the application of shrink tubing sections or sleeve-like plastic elements which may be suitably clamped on with welding technology are also referred to.

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1. An endlessly manufactured tooth cleaning means consisting of monofilament or multifilament threads wherein the threads are highly-elastically stretchable and under the effect of tensile forces their cross sectional area reduce, characterised in that the monofilament, or multifilament threads of high-elastic material are formed by way of textile processing,  
5 specifically by one of the methods from the selection of braiding, weaving or knitting, into a formation which has an abrasively acting surface, and that the threads by way of the textile processing are connected amongst one another such that a severing is possible without the threads coming undone.

10 2. A tooth cleanings means according to claim 1, characterised in that the means consists of several monofilament or multifilament threads and these at any desired distance, to one another are unreleasably connected amongst one another over a short distance.

15 3. A tooth cleaning means according to claim 2, characterised in that the unreleasable connection is effected by adhering, pressing or welding.

4. A tooth cleaning means according to claim 2, characterised in that at the connection location there is arranged an oblique cut or an oblique cut separating location.

20 5. A tooth cleaning means according to claim 1, characterised in that the monofilament or multifilament threads are provided at least with one thread in a colouring differing from the remaining ones.

25 6. A tooth cleaning means according to claim 1, characterised in that there are present at least one thread with a bright and with a dark colour tone.

30 7. A tooth cleanings means according to claim 1, characterised in that at least two monofilament threads are integrated with cross sectional areas differing greatly in size and which consist of the same or different materials.

8. A tooth means according to claim 1, characterised in that at least one monofilament or multifilament thread is coated with tooth or gum caring means.

9. A tooth cleaning means according to claim 1 or 2, characterised in that the monofilament or multifilament threads are manufactured of latex.



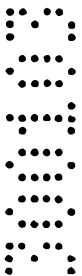
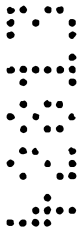
10. A tooth cleaning means as substantially described herein, with reference to the accompanying drawings.

Dated this 23 day of December

5 CORTEX HUMBELIN AG

By their Patent Attorneys

GRIFFITH HACK



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FIG. 1

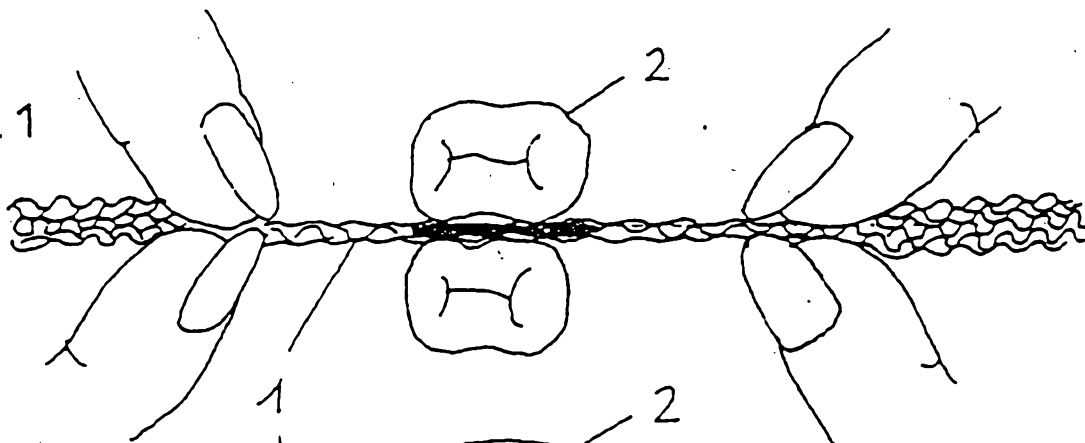


FIG. 2

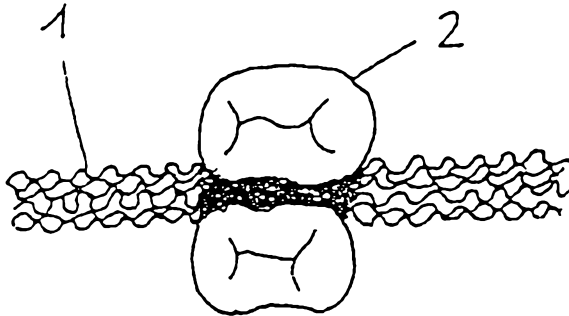


FIG. 3

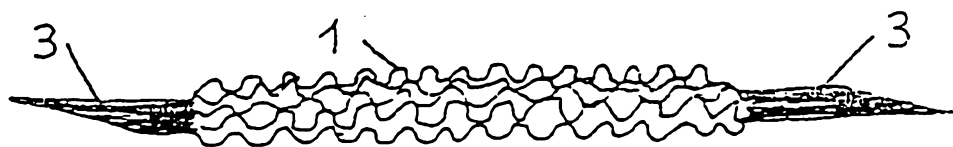


FIG. 4

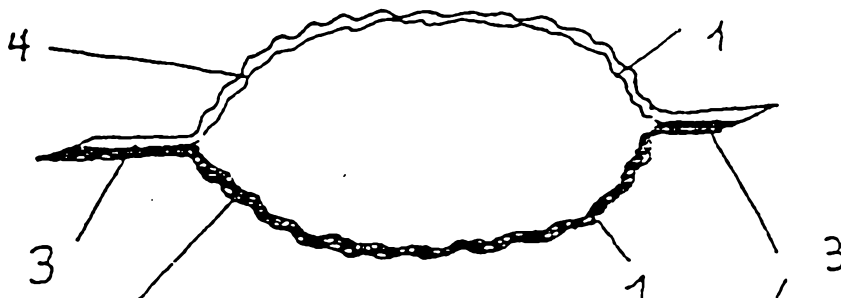


FIG. 5

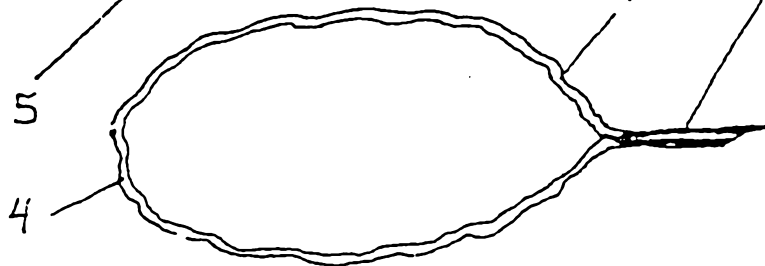


FIG. 6

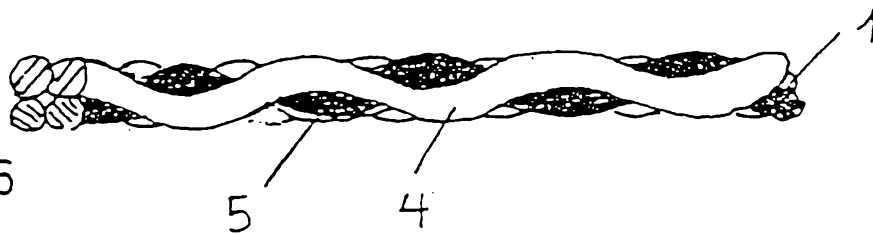


FIG. 7

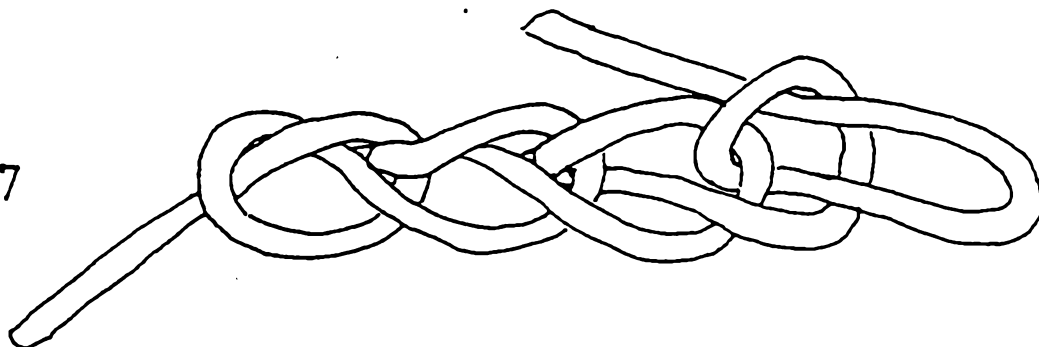


FIG. 8

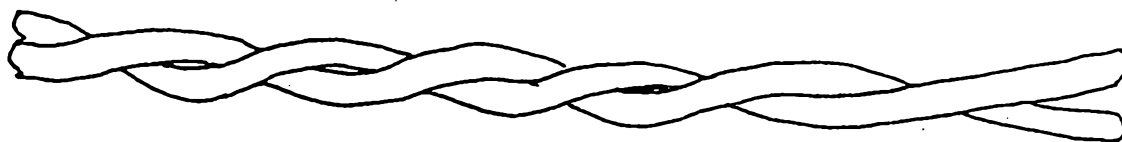


FIG. 9

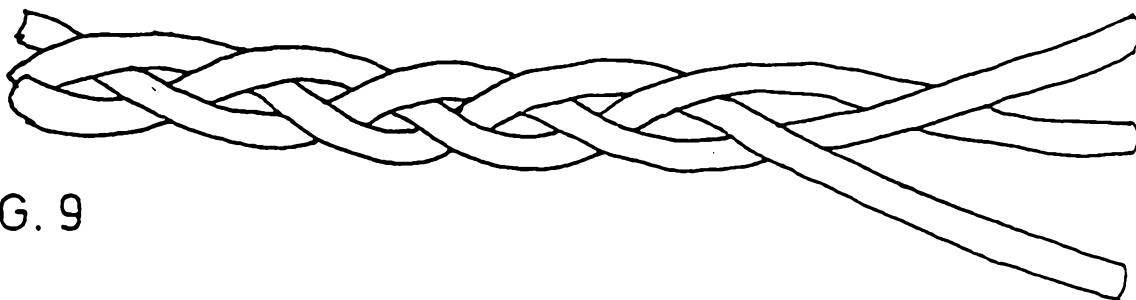


FIG. 10

