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A. HAEBERLIN

2,160,731

DENTAL PENCIL

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Fig. 1

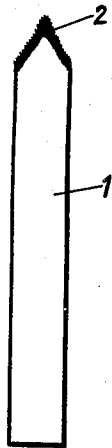


Fig. 3

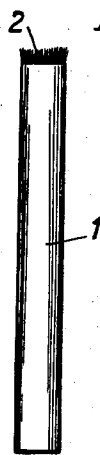


Fig. 7

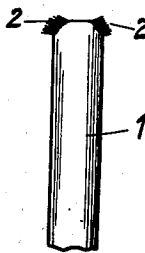


Fig. 2



Fig. 4



Fig. 5

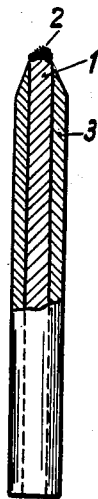


Fig. 8

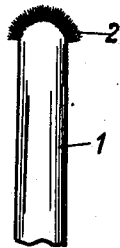


Fig. 6



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# UNITED STATES PATENT OFFICE

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## DENTAL PENCIL

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2 Claims. (Cl. 32—58)

The present invention relates to a device for cleaning teeth, which can also be employed for massaging the gums.

Hitherto, there have been used for cleaning teeth both mechanical devices, such as brushes and the like, and chemical means, such as toothpastes and the like. Bristle brushes have great drawbacks and are apt to cause considerable harm; they wound the gums and wear down the dental enamel, and hardly at all fulfil their intended purpose. The bristles used for making the brushes are coarse and stiff; in use they have a streaky action and they scratch and prick; they do not polish, but have a wearing action upon the dental enamel. The bristles give rise to scratches and pricks in the gum, and, since they are carriers of bacteria, the latter are scratched or pricked into the gum and cause infection, suppurations, and parodontitis.

It has also been proposed to use very soft wood which has been impregnated. This wood has the great disadvantage that it splinters, and breaks under very light pressure and thus can not fulfil the purpose intended.

Chemical means, such as toothpastes and the like, cannot be brought into intimate contact with the teeth by brushes, and still less into intimate contact with the fissures in the teeth. The action is merely streaky and short, and it is not possible to press firmly upon and to polish each separate tooth, since intimate contact with the tooth cannot be established at all. Also, separate parts of one tooth cannot receive special treatment by this means, and where these means are employed fresh water is necessary for cleaning the teeth.

The object of the present invention is to remove this drawback and other drawbacks in the means hitherto used. According to the present invention, this object is achieved by means of a small rod consisting of organic fibres secured with a binding medium which is soluble in saliva. The binding medium can advantageously consist of bacteria destroying material. The rod itself is so manufactured as to be sterile, and remain sterile. When this rod is used, the fibres therein are liberated by the saliva, due to solution of the binding agent, and there is formed a close fitting bunch of fibres or a tight fine fibred pencil or brush, which becomes renewed daily until, after a lengthy period, the entire rod is used up. Thus the brush is formed automatically. The fibre brush can be rubbed on the surface of any tooth with any desired pressure, and will adapt itself intimately to the surface, the fibres entering into

the fissures. Even with strong pressure, there occurs neither a wearing of the dental enamel nor an injury to the gum, and it is possible to give special treatment to each individual tooth. The fibres themselves are always completely impregnated with the binding agent, which acts as a disinfectant; they do not carry or transfer bacteria to the tooth or the gum. When rubbed over the space between teeth there is formed a wedge shaped pencil (see Fig. 1) which removes food remnants therefrom and cleans and polishes the side surfaces of the teeth. The pencil or brush is formed at every point where the rod is rubbed on the tooth. Thus there is formed at the end of the brush the end pencil (see Fig. 3). When the rod has to be held obliquely there is formed the side pencil (see Fig. 9). Since in practice the rod must be rubbed both at the end and also obliquely at its edge, there is formed the end and side pencil (see Fig. 10). As the fibrous material there may be used wood fibre and as the binding or disinfecting medium, boric acid. When wood fibres are employed, they are preferably freed from certain materials which impair the durability and the action, e. g. lignin in order that the fibres may be absolutely free from splinters, and in order to preclude any harm to the teeth and injury to the gums; apart from that, they are resistant to breaking.

The invention is more particularly described with reference to the examples of construction shown diagrammatically in the accompanying drawing, in which:

Figs. 1 and 2 show a first example in side elevation and in cross section.

Figs. 3 and 4 show in side elevation and in cross section a rod having a round cross section.

Figs. 5 and 6 show a third example in side elevation, partly in section and partly in cross section.

Figs. 7 and 8 show two ways in which the brush is formed when the pencil is used.

The rod *1* shown in Figs. 1 and 2 consists of wood fibres and boric acid. It is of advantage to manufacture the rod *1* in the following manner:

Conifer branches are cleansed and crushed mechanically and then boiled in water for a fairly long time under a pressure of 300 atmospheres. Thirty parts by weight of sulphaniilic acid are added to the water in order that the fibres may be completely liberated. When this has been done, the water is removed and the fibrous mass is washed out until it is pure, and dried. The fibres are now again boiled in 10% boric acid solution, and the mixture concentrated

and dried. This mass is then pressed into a solid rod under a pressure of 2,000 atmospheres.

Instead of conifer fibres, fibre-containing vegetable material of all kinds may be used as the basic substance.

5 The boiling of the conifer fibres gets rid of these materials, especially lignin, which becomes disadvantageous for the effective action of the rod. The hardness of the rod corresponds to the  
10 magnitude of the pressure used for compressing. Instead of a square cross section, a rectangular cross section, or, as in Figs. 3 and 4, a round cross section, could be selected. For combining the fibres and boric acid, variations can take  
15 place within very wide limits. A comparatively large amount of binding medium is used. The fibres themselves can be made of any desired fineness, so that it is of advantage to use comparatively fine and soft fibres which cannot in  
20 any circumstance injure the gum. The fibre pencil 2 of the rubbing surface gives an extremely effective and soft working surface, with which each tooth can be treated individually with regard to its flat surface and thus thoroughly  
25 cleaned and polished. The fibre pencil or fibre brush 2 conforms fully to the curves of the tooth and there is formed in the rubbing surface a tooth negative of which the fibres penetrate into the fissures in the tooth itself and polishing them.  
30 The same thing occurs in the gaps between the teeth, where there is formed at the rubbing surface firm wedged shaped pencil which cleans and polishes the sides of the teeth. The entire bundle of fibres being used always remains impregnated  
35 with disinfecting media. These disinfecting media thus come into intimate contact with the surface of the teeth during rubbing, in contrast with the bristles of tooth brushes, which only pass over the said surfaces, only touch single parts, and cannot fulfil the intended purpose.  
40 A tooth brush is also not capable of treating each separate tooth in an organised manner, but moves aimlessly around in the mouth on the

teeth and the gum, since despite many instructions from doctors, it is not possible to direct a tooth brush to the desired place on an individual tooth.

In Figs. 5 and 6 the rod 1 is surrounded with  
5 an outer covering 3 of disinfectant materials. The thickness of this coating can be made as desired, so that more or less of the disinfectant can be transferred to the tooth and the gum according to the particular proportions.

This form of construction renders it possible  
10 not only to use extremely effective supply wood fibres, but also simultaneously most effective disinfectants, whereby there exists the certainty that the latter will also be rubbed on to the  
15 entire surface of the tooth.

What I wish to claim and secure by U. S. Letters Patent is:

1. An element intended for cleaning teeth and for massaging the gum, said element having the  
20 form of a rod and consisting of substantially longitudinally extending wood fibre threads, and a binder of boric acid, the whole being compacted under sufficient pressure to combine the elements in stick form, said fibres being suitably stiff and  
25 having the property when in use, of coming apart and erecting themselves at the rubbing surface in the form of a brush after the binding agent has been dissolved in the saliva.

2. An element intended for cleaning teeth and for massaging the gum, said element having the  
30 form of a rod and consisting of substantially longitudinally extending wood fibre threads, and a binder of boric acid, the whole being compacted under a pressure of approximately 2000 atmos-  
35 pheres to combine the elements in stick form, said fibres being suitably stiff and having the property when in use, of coming apart and erecting themselves at the rubbing surface in the form of a brush after the binding agent has been  
40 dissolved in the saliva.

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