Dec. 22, 1959 D. C. SIAMPAUS 2,917,759

DENTAL MASSAGE AND TOOTH CLEANING IMPLEMENT

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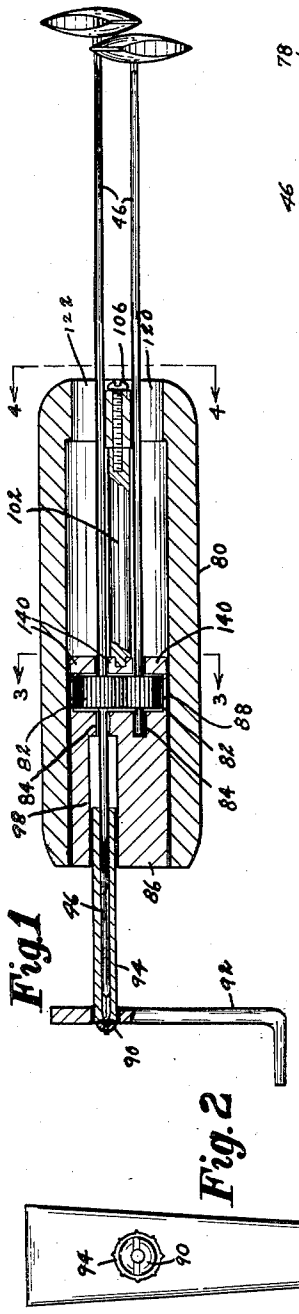


Fig. 1

Fig. 2

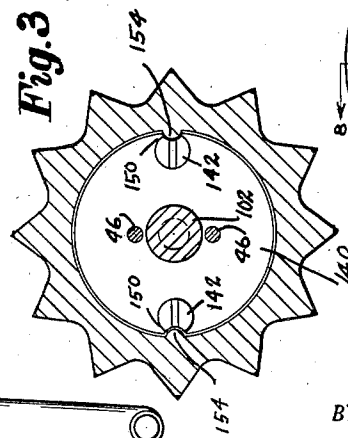


Fig. 3

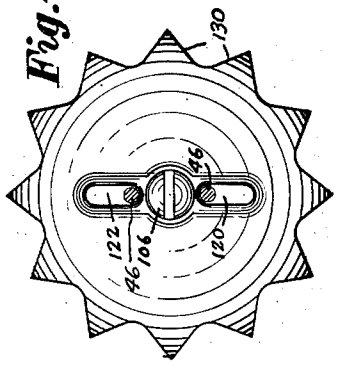


Fig. 4

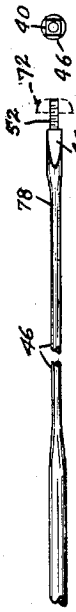


Fig. 5

Fig. 6

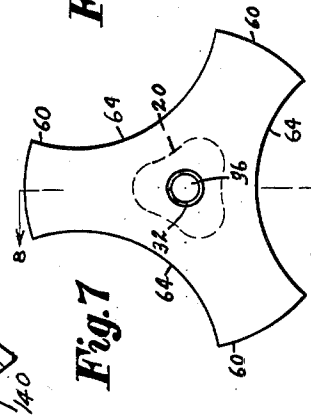


Fig. 7

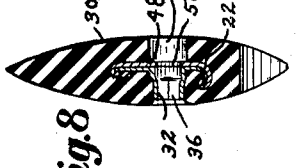


Fig. 8

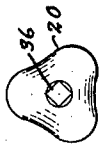


Fig. 9

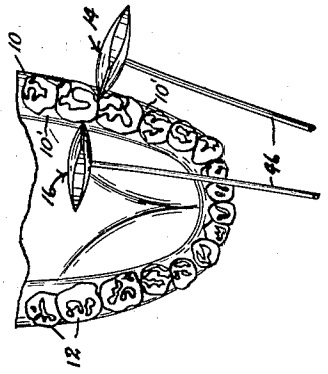


Fig. 10

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DENTAL MASSAGE AND TOOTH CLEANING IMPLEMENT

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3 Claims. (Cl. 15—25)

This invention relates to dentistry and more particularly it is an object of this invention to provide a mechanism for gum squeezing and tooth cleansing.

It is an object of this invention to provide a device for squeezing and cleansing hitherto unreached gums and other areas.

A further object is to provide a gum squeezing device having rotors disposed at different distances from its handle.

Still another object is to provide the device with resilient shafts.

A further object is to provide means for obtaining flexibility for rotor shafts by improved mounting means permitting maximum portions of the lengths of the shafts to be free to flex.

Still another object resides in the provision of a construction having a metal or relatively hard piece at its center, a piece of fabric material disposed on one side of a hard piece, and the rotor being covered on both the fabric and the metal piece sides with a flexible resilient material such as rubber.

Yet another object of the invention is to provide a rotor having prongs with outer edges of substantial width and in a spacing whereby the following outer edge portions of a prong function as a fulcrum against the gum for prying free the leading outer edge portion of the prong when the prong is disposed between adjacent teeth.

Other and still further advantages and objects of the invention will become apparent from the following detailed description of a preferred embodiment thereof.

In the drawings:

Figure 1 is a side elevation of the gum squeezing device of this invention, a forward half portion of the housing thereof being removed, and the remainder, together wtih certain other parts, being shown in section.

Figure 2 is a left-hand end view of the crank handle of the device drawn to a larger scale.

Figure 3 is an enlarged view-in-section taken along the line 3—3 of Figure 1.

Figure 4 is an enlarged view-in-section taken along the line 4—4 of Figure 1.

Figure 5 is an enlarged view of an end portion of one of the shafts of the invention, portions thereof being broken away, and a nut for attachment thereto being shown in dotted lines.

Figure 6 is a right hand view of the shafts of Figure 5.

Figure 7 is a right hand enlarged view of one of the rotors.

Figure 8 is a view-in-section taken along the line 8—8 of Figure 7.

Figure 9 is a right hand view of the metal centerpiece of the rotor shown in Figure 8.

Figure 10 is a view showing the lower jaw of an individual showing the teeth thereon being cleaned by the rotors of this invention, the handle portion of the device not being shown.

The gum massaging device of this invention is for massaging the gums and cleaning the teeth. In Figure 10 the lower jaw of an individual is generally indicated at 10 and a plurality of teeth are shown therein at 12.

In accordance with this invention two oppositely disposed rotors which are generally indicated at 14 and 16 are provided. The rotors 14 and 16 are adapted to be disposed on opposite sides of the gums 10'.

As best seen in Figure 8 and Figure 9, each rotor 14 and 16 is composed of a hard center member 20 which latter is formed of a hard material of a substantially triangular shape. The member 20 is provided with rounded corners two of which are a plurality of outturned portions, one of which is best seen at 22 in Figure 8. The outwardly extending portions 22 are for the purpose of providing the member 20 with a greater hold on a resilient covering 30 which latter is preferably composed of rubber or other flexible, resilient material.

The member 20 is further provided with an annular portion 32 which latter extends outwardly from one side thereof having an aperture 36 therethrough. The purpose of the aperture 36 is to receive the square end 40 of a flexible, resilient shaft 46, more fully described hereafter.

On one side of the hard centerpiece 20 a fabric covering layer 48 is disposed. The layer 48 is provided with an opening 50 therethrough for receiving a threaded end 52 of the flexible, resilient shaft 46. The fabric member is disposed with its edges extending around the edges of the member 20 and disposed against the opposite side thereof. The flexible covering 30 is disposed on both sides of the member 20 and the fabric 48.

The flexible resilient covering 30 terminates in a plurality of, and preferably three, equidistantly spaced apart prongs 60. Each prong 60 is of tapering pointed shape as seen in side elevation extending from a thicker inner portion to a thinner terminal end portion. As best seen in Figure 7, the outer end of each prong 60 is rather wide. Between each prong 60 the exterior of the rotor is provided with a concavely arcuate surface 64.

The outer covering 30 is further provided with a bore 66 therethrough which places the aperture 50 in the fabric piece 48 in communication with the exterior of the rotor.

The shafts 46 are attached to the rotors 14 and 16 by means of nuts, one of which latter is shown in dotted lines at Figure 5. Each nut 72 is threadedly received on the threaded outer end 52 of its shafts 46. Each shaft 46 has a relatively thinner portion 78 so disposed between the handle 80 of the device and the outer end portion of each flexible, resilient shaft. The portion 78 is best shown in Figure 5 and is for the purpose of providing the shafts with resiliency.

Each shaft 46 is provided with a gear 82 on its handle end, the gears 82 being of the same size and being enmeshed with each other. The shafts 46 are rotatably received in bores 84 in an insert 86. The insert 86 is provided with a hollow portion 88 for reception of the gears 82. One of the shafts 46 extends completely through the insert 86.

The other end of the longer shaft 46 is secured by means of a nut 90 to a crank handle 92. Also secured to the crank handle 92 and longest shaft 46 is an elongated cylindrical member 94. The member 94 has a larger diameter than the shaft 46 and is snugly but rotatably received in an enlarged rearward end portion 98 of the bore 84 of the longest shaft 46.

The insert 86 is held in place by means of an elongated spacer 102 which latter is secured to the rotor side of the insert 86 and is secured by means of a screw 106 to the rotor end of the handle.

At the rotor end of the handle 80 two slots are provided as shown at 120 and 122. The slots 120 and 122 are disposed extending outwardly from the normal positions of the flexible, resilient shafts 46. The slots snugly receive the shafts whereby the shafts are permitted to move in directions toward and away from each other in alignment with their normal positions but cannot move in other directions. The purpose of this construction is to permit, each flexible, resilient shaft 46 to have an unsecured effective length greater than would otherwise be possible.

The outside of the handle 80 is provided with a plurality of outwardly extending ridges 130 disposed longitudinally thereon for facilitating the gripping of the handle.

As best shown in Figure 3, a member 140 is provided on the rotor end of the insert 86. The member 140 is secured to and forms a part of the insert 86. The securing means consists of two screws 142 which latter extend through the member 140 and into the insert 86. It is to the member 140 portion of the insert assembly that the member 102 is secured. The member 102 is secured to the member 140 portion of the insert assembly by means of cement.

The insert 86 is provided with longitudinally disposed grooves 150 for the purpose of receiving elongated protrusions 154 which latter are longitudinally disposed of the handle 80. The heads of the screws 142 have portions cut away to accommodate the ribs 154, as best seen in Figure 3. The purpose of the grooves 150 and protrusions 154 is to prevent the insert 86 from rotating with respect to the handle 80.

In operation, and as best seen in Figure 10, the resilient prongs 60 of the rotor rotate in approximately parallel spaced apart swaths are adapted to massage the gums 10 and particularly to squeeze that portion of the gums 10 which is disposed between the teeth and which is not adequately reached by a toothbrush.

It will be further seen that the arcuate surfaces 64 of the rotor are flat in a transverse direction and the edges thereof clean the opposing surfaces of the teeth during rotation.

If the operator holds his teeth spaced apart slightly, while certain prongs of the rotor are cleaning the teeth of one jaw certain other prongs of the rotor are cleaning the chewing surfaces of the teeth on the opposite jaw.

It will be seen that any suitable means can be employed for causing the rotor to revolve in the position shown.

As the rotors are disposed in Figure 10, the rotor 14 is forcing blood inwardly while the rotor 16 is forcing blood outwardly. In this manner the blood is caused to move. If the rotors 14 and 16 were opposite each other there would be more of a tendency to compress the blood rather than cause it to move.

It will be seen that each rotor has prongs which are only one layer deep along the axis of the rotor for a minimum of interferences of other prongs of the same rotor with the penetration between the teeth of a given prong of the same rotor.

This invention has provided a device for dental hygiene which is adapted to massage the gums and clean the teeth and which is particularly adapted to squeeze those gum portions which are disposed between the teeth and to clean those tooth portions which face each other.

As best seen in Figure 7, the outermost edges of the prongs 60 are each of a substantial width whereby at times when a prong is disposed between two adjacent teeth the following outer edge portion of the prong tends to act as a fulcrum against the gum in prying free the forwardmost outer edge portion of the prong.

It will be further seen that the concave side surfaces 64 of each prong serve to provide it with a shape for facilitating the effect mentioned in the preceding paragraph.

Also, the forward and rearward portions of the outer edge of each prong are pointed. This has the effect of presenting an inclined surface to that wall of a tooth which is disposed opposite an adjacent tooth, providing a better tooth cleansing. Referring to Figure 8 it will be seen that the prongs 60 of each rotor taper from relatively thick inner portions to thinner outer end portions as seen in Figure 8 at a right angle to the axis of the rotor. The prongs 60 are sufficiently thin at their outer ends, as best seen in Figure 10, to extend a substantial distance between two juxtaposed teeth of a human being for cleaning those areas of the interproximal surfaces of the teeth which are not in abutment.

The rotors preferably have three prongs, an ideal number, whereby the prong behind one that is already in a space between the teeth acts as a fulcrum in the prying of the prong that is between the teeth outwardly whereby the inner prong is pried outwardly about the fulcrum made by the following outer prong.

From the foregoing description, it is thought to be obvious that a gum squeezing device constructed in accordance with my invention is particularly well adapted for use, by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof, and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice, except as claimed.

I claim:

1. In a gum squeezing device: a rotor, said rotor having on its periphery a plurality of outwardly extending, spaced apart, flexible, resilient prongs, said prongs each having a center composed of hard material, a layer of fibrous material being disposed on one side of said hard material, portions of said fibrous material being disposed extending around the edge of said hard material and being partially disposed on the opposite side thereof, and the outside of said rotor on both the fibrous material and the hard material sides thereof being covered by a resilient flexible material.

2. In a dental massage and tooth-cleaning implement having a hollow handle, two elongated shafts extending into said handle, rotor means mounted on the outer end of each shaft, the rotor means on one shaft overlapping that of the other, means in said handle rotatably mounting said shafts, each of said shafts extending forwardly from said mounting means to said rotors as a pivotless flexible unit and in which the resiliency of said shafts is sufficient by itself to permit movement apart of said rotors from positions in which said rotors are overlapped to positions on the opposite sides of a tooth.

3. In a dental massage and tooth-cleaning implement having a hollow handle, two elongated shafts extending into said handle, rotating members having projections thereon adapted to be received between the teeth, a said rotating member being mounted on the outer end of each shaft, the rotating member on one shaft overlapping that of the other, means in said handle rotatably mounting said shafts, each of said shafts extending forwardly from said mounting means to said members as a pivotless flexible unit and in which the resiliency of said shafts is sufficient by itself to permit movement apart of said members from positions in which said members are overlapped to positions on the opposite sides of a tooth.

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