July 2, 1957 A. OLSON 2,797,424

TOOTHBRUSH

Filed Oct. 20, 1954

Fig. 2

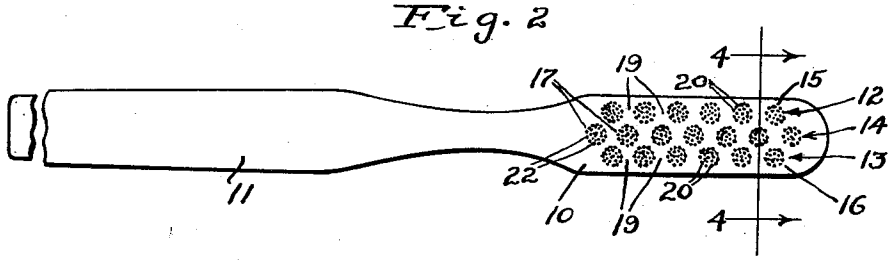


Fig. 1

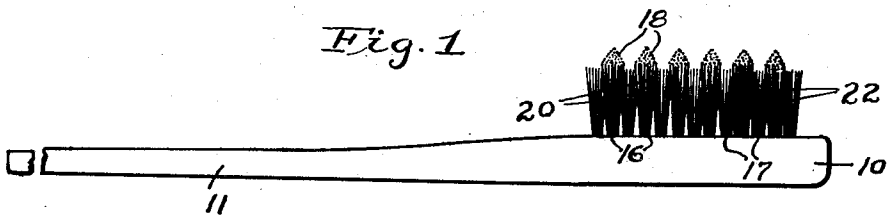


Fig. 3

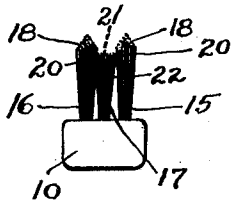
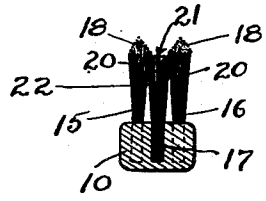


Fig. 4



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TOOTHBRUSH

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2 Claims. (Cl. 15—167)

My invention relates to tooth brushes and has for an object thereof to provide a tooth brush which will effectively clean the teeth and at the same time massage the gums adequately without injury thereto.

Another object of the invention is to provide a tooth brush which in use results in reduced abrasion or erosion and decay of the teeth especially at the gum line.

A further object of the invention resides in providing a tooth brush utilizing both stiff and soft bristles disposed in tufts and in which the stiff bristles are arranged to reach into the interproximal spaces of the teeth and the soft bristles are arranged to project between the tufts of the stiff bristles and to engage and fan out over the gingival portions of the teeth and the gingiva at the gum attachment.

Another object of the invention resides in providing a tooth brush as aforesaid in which the tufts of bristles are arranged in three juxtaposed rows, the stiff bristles in the outer rows of tufts and the soft bristles in the intermediate row of tufts.

A feature of my improved tooth brush resides in the construction of its tufts of bristles wherein the tufts in the intermediate row are formed with blunt or cup-shaped ends and the tufts in the outer rows are formed with pointed ends extending beyond the ends of said tufts in the intermediate row.

Other objects of the invention reside in the novel combination and arrangement of parts and in the details of construction hereinafter illustrated and/or described.

In the drawings:

Fig. 1 is a side elevational view of a tooth brush illustrating an embodiment of my invention, the same being substantially one-third oversize in scale.

Fig. 2 is a plan view of the tooth brush shown in Fig. 1.

Fig. 3 is an end elevational view of the said brush.

Fig. 4 is a transverse sectional view of the head of said brush, said view being taken as on the line 4—4 of Fig. 2.

In order to care for the teeth properly and procure healthy gums and underlying supporting structures, accumulations on the teeth and food deposits in the interproximal spaces and in the gum cuffs must be removed. At the same time the marginal gingiva should be massaged gently while a vigorous stimulating massage should be given to the septal gum. A brush having only stiff bristles is obviously incapable of massaging the gums in varying degrees at different localities, as desired, and is very apt to cause injury to the gums and root surfaces of the teeth in any effort to use the same in cleaning the teeth at the gum line. Obviously, a brush having only soft bristles is incapable of performing the desired cleansing of the teeth and massaging of the gums at the interproximal spaces, and I am unaware of any prior brush construction employing both stiff and soft bristles which is capable of accomplishing the desiderata, aforesaid, in the practice of dental hygiene.

My improved brush construction includes an elongated head supported by any suitable handle. This head carries three relatively spaced parallel rows of tufts, the tufts

in each row being spaced from each other. The tufts in the outer rows lie directly opposite one another laterally of the head, while the tufts in the intermediate row are disposed directly opposite the spaces between the tufts in the outer rows, and beyond the end tufts in the outer rows. Said tufts in the outer rows are relatively long and pointed at their ends and are constructed of relatively stiff bristles. The tufts in the intermediate row are considerably shorter than those of the outer rows and have blunt or cup-shaped ends. These short tufts are constructed of soft bristles adapted in the use of the brush to project through the spaces between the outer tufts and fan out at the bulges of the teeth and adjoining gingiva between the interproximal portions of the teeth and septal gum areas which at the same time are engaged by the stiff bristles of the outer tufts in one row or the other thereof.

More specifically, the invention comprises a brush head **10** and from which issues a handle **11**. These parts may be constructed of any suitable material, preferably of a plastic, and are made integral.

Imbedded in the head **10** are two outer rows **12, 13,** and an intermediate row **14** of tufts of bristles, said tuft-rows being juxtaposed and in close proximity and extending in parallel relation along the head **10** longitudinally thereof. The tufts in the outer rows **12** and **13** are indicated by the reference numerals **15** and **16** while the tufts in the intermediate row are indicated by the reference numeral **17**. The tufts **15** and **16** are circular in cross section where they issue from the head **10** and they slightly flare outwardly. These tufts **15** and **16** have pointed ends **18**. They are of equal length and spaced apart longitudinally of the head **10** forming spaces **19** therebetween. These spaces **19** at the plane of issuance of the tufts **15** and **16** from the head **10**, are substantially equal to the minimum diameters of said tufts. Said tufts **15** and **16** are disposed directly opposite one another laterally of the head **10** and are formed of relative stiff or hard bristles **20**. The tufts **17** in the intermediate tuft-row **14** are staggered relative to the tufts **15** and **16** in the outer tuft-rows **12** and **13** and lie directly opposite the spaces **19** between said tufts **15** and **16**. These tufts **17** correspond in size and shape with the tufts **15** and **16** except that they are shorter and blunt at their ends or cupped as shown at **21**. Said tufts **17** in the intermediate tuft-row are formed of bristles **22** which are relatively soft as compared to the bristles **20** of the tufts **15** and **16** in the outer tuft-rows **12** and **13** and they fan out readily under pressure applied thereto in the use of the tooth brush. These relatively soft bristles **22** of the tufts **17** in the intermediate tuft-row **14** are substantially the same length as and perferably slightly shorter than the shortest bristles **20** of the tufts **15** and **16** in the outer tuft-rows **12** and **13**. There is one more tuft in the intermediate row **14** than there are tufts in either of the rows **12** or **13**, whereby two end tufts **17** are provided in the row **14** each of which stands outwardly beyond the end tufts **15** and **16** at its respective ends of the outer tuft rows **12** and **13**.

In using the tooth brush, a suitable dentifrice may be placed on the brush as usual and the brush will then be applied to surfaces of the teeth, for example, the buccal surfaces of the teeth of the mandible on one side thereof, with the bristles extending angularly relative to the surfaces of the teeth and with the ends of the tufts directed toward the occlusal plane. The brush is then pressed laterally against the teeth and a restricted vibratory rotary-like motion is imparted thereto which produces a short and anterior posterior movement of the bristles as well as a limited movement thereof in a direction toward and from the occlusal plane. In thus applying the brush to the teeth, the stiff bristles **20** of the tufts **15** or **16** of the outer row **12** or **13**, placed next to the teeth, are bowed against the teeth and caused to enter the interproximal

spaces where the end portions of said bristles **20** serve to dislodge accumulations from the teeth. While the end portions of said bristles **20** cleanse the interproximal portions of the teeth to which the brush is applied, the portions of said bristles **20** near the head **10** serve to massage the septal or interdental gum portions without causing injury thereto. Upon the bending of the stiff bristles **20** of a row of outer tufts against the teeth, the end portions of the soft bristles **22** of the tufts **17** of the intermediate row **14** enter and project through the spaces **19** between the outer tufts fanning out over the gingival bulges of the teeth in a cleansing action and, at the same time, gently massaging the gum crest and subjacent portions of the gingiva. Some of said soft fanned-out bristles creep into the gum cuff gently cleaning therein both gum and teeth clear to the gum attachment without injury either to the gum tissue or the teeth. Others of the soft fanned-out bristles **22** of the intermediate row of tufts **17** further act in a protective buffer-like capacity between the stiff bristles **20** of tufts **15** or **16** and the interdental gum. While this buffer-like action of said soft bristles **22** does not interfere with the vitally necessary vigorous massage given by said stiff bristles **20** to the interdental area of the gums, it effectively minimizes harshness in the massaging action of the stiff bristles **20** which otherwise would obtain in the employment of stiff bristles of such stiffness as to meet the optimum desiderata in the cleansing of the interproximal tooth portions and in the massaging of the septal gum areas. Cupping of the ends of the tufts **17** in the intermediate row **14** promotes the spreading of the soft bristles **22** of said tufts and enhances the action of such bristles in the diverse functioning thereof.

It will now be readily comprehended that the provision of tufts of bristles in a tooth brush, as herein disclosed, is importantly advantageous especially in the following respects: The effective interproximal tooth-cleansing action performed by the relatively stiff bristles **20** of the relatively long and pointed tufts **15**, **16**; the accompanying simultaneous and effective action performed by said stiff bristles **20** in vigorously massaging and stimulating the interdental gum areas; the action of the soft bristles **22** which, upon the projection of their tufts **17** between the tufts of the stiff bristles **20**, serve effectively to clean the gingival bulges of the teeth and also the gum cuff, both as to gum and teeth, clear to the gum attachment, while at the same time serving, in part, to gently massage the marginal gingiva and, in further part, to provide buffer means for the interdental gum-massaging portions of said stiff bristles **20**. Thus, it is seen that the present invention in tooth brushes attains all of the advantages of brushes having stiff bristles and brushes having soft bristles without the shortcomings of either.

Changes in the specific form of the invention, as herein described, may be made within the scope of what is claimed without departing from the spirit of the invention.

Having described the invention, what is claimed as new and desired to be protected by Letters Patent is:

1. In a tooth brush, an elongated head, two outer rows of tufts of bristles on the head, said rows extending longitudinally of the head, one row at either side thereof, said tufts issuing outwardly from said head and being arranged in each row with spaces therebetween, the spaces in one outer row being directly opposite the spaces in the other outer row laterally of said head, and an intermediate row of tufts of bristles disposed between the outer rows, the tufts of the intermediate row being spaced apart and disposed laterally opposite the spaces in said outer rows in close proximity to the tufts of the outer rows, the bristles of the tufts of the outer rows being relatively long and stiff, the bristles of the tufts of the intermediate row being relatively short and soft, the relatively stiff bristles of an outer row of tufts pointed generally codirectionally with and laterally pressed leaningly against a row of teeth in usage of the brush acting to contact the interdental tooth portions and to cleanse the same and the interproximal spaces therebetween, and further, to overlie and vigorously massage the interdental gum portions, the relatively soft bristles of the intermediate row of tufts being adapted to project between the tufts of the pressure-applied outer row of tufts, the thus projected soft bristles acting and being of a degree of softness enabling them to act in fanning out over the bulges of the teeth and the adjacent marginal gingiva and the interdental gum portions beneath the stiff bristles overlying said interdental gum portions, said soft bristles in such fanned-out disposition thereof serving to cleanse the bulges of the teeth to the gum attachment and to cleanse and gently massage the marginal gingiva exteriorly thereof and within the gum cuff to the gum attachment, said soft bristles constituting an intermediary between the stiff bristles and the interdental gum portions, and in such capacity serving, in buffer-like fashion, to protect the interdental gum portions against injury by the stiff bristles in their vigorous massaging of said interdental gum portions.

2. In a tooth brush, an elongated head, two outer rows of tufts of bristles on the head, said rows extending longitudinally of the head, one row at either side thereof, said tufts issuing outwardly from said head and being arranged in each row with spaces therebetween, the spaces in one outer row being directly opposite the spaces in the other outer row laterally of said head, and an intermediate row of tufts of bristles disposed between the outer rows, the tufts of the intermediate row being spaced apart and disposed laterally opposite the spaces in said outer rows in close proximity to the tufts of the outer rows, the bristles of the tufts of the outer rows being relatively long and stiff, said tufts of said outer rows having pointed ends, the bristles of the tufts of the intermediate row being relatively short and soft, said tufts of said intermediate row having blunt ends, the relatively stiff bristles of an outer row of tufts pointed generally codirectionally with and laterally pressed leaningly against a row of teeth in usage of the brush acting to contact the interdental tooth portions and to cleanse the same and the interproximal spaces therebetween, and further, to overlie and vigorously massage the interdental gum portions, the relatively soft bristles of the intermediate row of tufts being adapted to project between the tufts of the pressure-applied outer row of tufts, the thus projected soft bristles acting and being of a degree of softness enabling them to act in fanning out over the bulges of the teeth and the adjacent marginal gingiva and the interdental gum portions beneath the stiff bristles overlying said interdental gum portions, said soft bristles in such fanned-out disposition thereof serving to cleanse the bulges of the teeth to the gum attachment and to cleanse and gently massage the marginal gingiva exteriorly thereof and within the gum cuff to the gum attachment, said soft bristles constituting an intermediary between the stiff bristles and the interdental gum portions, and in such capacity serving, in buffer-like fashion, to protect the interdental gum portions against injury by the stiff bristles in their vigorous massaging of said interdental gum portions.

References Cited in the file of this patent

UNITED STATES PATENTS

1,482,027	Ochse	Jan. 29, 1924
1,642,465	Scheetz	Sept. 13, 1927
1,943,225	McIntyre	Jan. 9, 1934
2,244,615	Garcin	June 3, 1941