Oct. 28, 1947. G. B. AUFSESSER 2,429,740

TOOTHBRUSH

Filed March 19, 1946

FIG. 1.

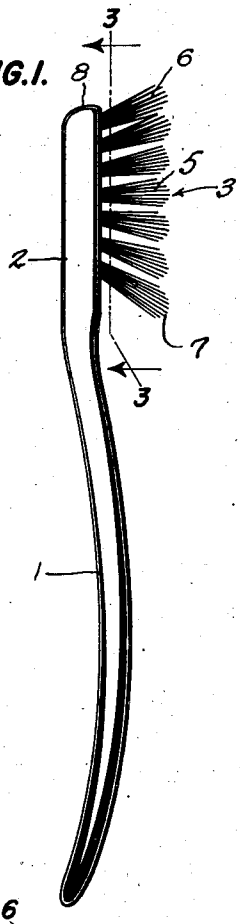


FIG. 2.

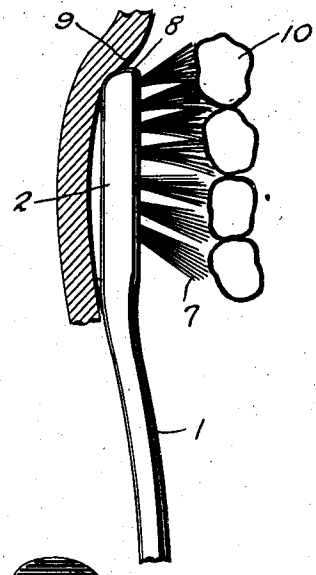
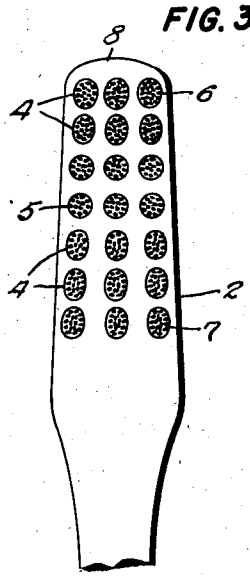


FIG. 3.



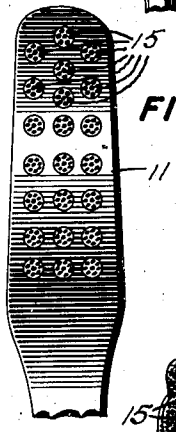


FIG. 6.

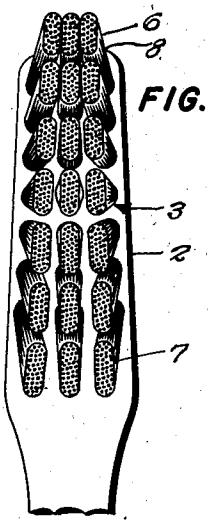


FIG. 4.

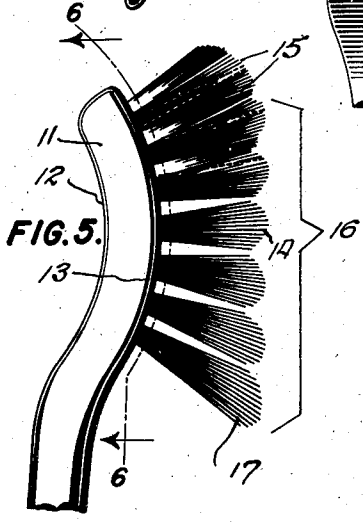


FIG. 5.

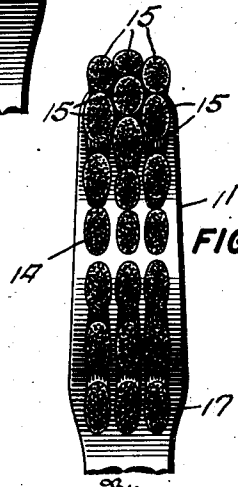


FIG. 7.

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UNITED STATES PATENT OFFICE

2,429,740

TOOTHBRUSH

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1 Claim. (Cl. 15—167)

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This invention relates to toothbrushes. It has for its general object the provision of a toothbrush particularly designed for the efficient and comfortable cleaning of the back teeth.

It is commonly recognized that the average user of a toothbrush slights the back teeth because of his inability to control the amplitude of the short reciprocatory movements of the toothbrush which must be used to prevent the front end of the toothbrush from striking painfully against the soft cheek tissue which extends close to the ends of the gums.

One of the objects of the invention is to provide a toothbrush in which the bristle tufts at the forward end extend in advance of the front end of the brush back and are so constructed and arranged that some of the bristles serve as a resilient support upon which the brush rides back and forth, while some perform the scrubbing action.

Another object of the invention is to provide a toothbrush in which the extreme bristle tufts at both ends act as shock absorbers in dampening the movements of the brush near the limits of its reciprocatory range.

A further object of the invention is to provide a toothbrush, the back of which adjacent the head is formed with a concave recess adapted to engage the cheek at the corner of the mouth, to cause the cheek to support the brush and move in and out therewith as the brush is reciprocated against the back teeth, the elasticity of the cheek serving to control and to dampen the reciprocatory movements of the brush.

Other objects of the invention will appear as the following description of preferred and practical embodiments thereof proceeds.

In the drawings:

Figure 1 is a side elevation of a toothbrush embodying the principles of the invention;

Figure 2 is a transverse section through the jaw, illustrating the toothbrush in action;

Figure 3 is a section taken along the line 3—3 of Figure 1;

Figure 4 is a plan view of the bristle face;

Figure 5 is a side elevation of another form of the invention, the handle being broken away;

Figure 6 is a section taken along the line 6—6 of Figure 5;

Figure 7 is a plan view of the bristle face.

Referring now in detail to the several figures, and first adverting to the brush shown in Figures 1 to 4, it consists of a handle 1, back 2 and bristle head 3. The back 2 is straight longitudinally. The bristle head is composed of bristle tufts suitably secured to the back. The bristle tufts are preferably arranged in transverse rows 4, as indicated in Figure 3. The tufts 5 of the middle transverse row are substantially perpendicular to the brush back. The tufts of the rows forwardly of the middle row progressively flare in a forward direction. Those rearward of the middle row flare progressively in a rearward direction. The front and rearmost rows of tufts 6 and 7 flare equally in opposite directions. The front row of tufts 6 extends forwardly beyond the front end 8 of the back.

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The ends of the bristle tufts terminate in a plane substantially parallel to the back 2. It follows that the bristles in the most flaring tufts, that is, those in the forward and rearward tufts 6 and 7 are in general longer and therefore more resilient than the bristles in the intermediate tufts. The ends of the bristle tufts are not flat, but convex, so that in each tuft some bristles are longer than others.

In the mouth the inner corner of the cheek 9, Figure 2, comes quite close to the back tooth 10. When an ordinary toothbrush is introduced into the space between the back teeth and cheek, it pushes the corner of the cheek away from the teeth, as shown in Figure 2. The brush must be inserted until the forward bristle tufts engage the last tooth. In the ordinary toothbrush the bristles do not flare forwardly, so the front end of the brush back is just as far back in the mouth as the forward bristle tufts and pressing into the cheek tissue. Now the arm is not schooled to make very short reciprocatory movements such as are necessary to keep the brush-back in the ordinary tooth brush from jabbing painfully into the cheek tissue when the back teeth are being cleaned. Consequently, the user of the ordinary toothbrush is inclined to slight the job.

In the subject brush the ends of the leading tufts are ahead of the front end of the brush-back, so that when they reach the surface to be cleaned the back of the brush is not yet at the forward limit of its reciprocatory stroke. Furthermore, the ends of the longer bristles in the extreme forward and rearward tufts 6 and 7 do not move translatively over the tooth surfaces which they contact, but remain fixed thereupon, the bristles themselves bending resiliently back and forth as the brush is reciprocated, thus resiliently supporting the brush and easing the rigidity of its reciprocatory motion. Moreover, the longer bristles of the extreme tufts bend in against the next adjacent rows of tufts so that their movement is yieldingly resisted by the said

adjacent rows of tufts. This is a shock absorbing function which dampens the reciprocatory thrust of the brush at the limits of its reciprocatory movement.

The ends of the shorter bristles move across the surfaces of the teeth and perform the detergent function.

The aggregate result of these several functions is to provide a controlled reciprocatory movement of the brush which is easy for the arm to execute in view of the resilient support afforded by the longer bending bristles and the fact that the reciprocatory range can be longer because of the advance position of the forward bristle tufts, and which will not hurt the cheek in view of the dampening of the reciprocatory thrust resulting from the shock absorbing function which the rows of bristle tufts adjacent the extreme rows exercise on the bending of the bristles of the extreme tufts.

Referring to that form of the invention shown in Figures 5, 6 and 7, the brush-back 11 is concavo-convex in a longitudinal direction, forming a depression or hook 12 on the outside and a crown 13 on the bristle side, from which the bristle tufts emanate. The middle row of bristle tufts 14 is perpendicular to the back 11 at the apex of the crown 13 and the rows of bristles forward and backward of this middle row flare progressively in opposite directions.

In this form of the invention the tufts 15 at the forward end are arranged in a dense bundle, a hexagonal arrangement being shown about a central tuft.

The major portion of the bristle tufts terminate in the same flat plane. This refers to the tufts embraced within the bracket 16, in Figure 5. The tufts forward of said bracket are trimmed off at an angle above said plane. Due to the convex shape of the crown 13, the bristles in the rearward tufts 17 are much longer and therefore more resilient than the bristles in the middle tufts 14. This gives a wide gradation in the cleaning characteristics of the brush. The bristles in tufts 14 are best fitted to perform a scrubbing action against the general surface of the teeth. The bristles in tufts 17 being more resilient, are especially efficient in whisking out foreign fragments that may have lodged between the teeth. By tilting the brush about the axis of its curvature, any part of the bristle face may be selectively brought into most prominent working position against the teeth.

The densely massed tufts 15 at the front are especially designed for cleaning the rearmost teeth. When the brush is tilted so that these tufts are in engagement with the tooth surface, the tufts 17 are out of engagement with the teeth. Therefore, the shock absorbing function and the resilient support afforded by the longer bristles in these tufts, which characterize the first described form of the invention, are not available to dampen the reciprocatory thrust of the end of the brush against the inside of the cheek.

This result is however accomplished through the provision of the concave depression 12 in the brush-back. When the brush is inserted in the mouth, to bring the tufts 15 against the back teeth, the depression 12 is hooked over the corner of the mouth and the brush so supported that the cheek moves in and out with the brush, having a cushion function in effectively dampening the reciprocatory movement of the brush.

The concavo-convex shape of the brush-back follows the natural curvature of the dental arch, in working on the inside of the teeth.

While I have in the above description disclosed what I believe to be practical embodiments of the invention, it will be understood by those skilled in the art that the specific details of construction and arrangement of parts, as shown, are by way of illustration and not to be construed as limiting the scope of the invention.

What I claim as my invention is:

A toothbrush comprising a substantially rigid back of concavo-convex shape with the concave depression in its outer face and a bristle head emanating from the convex face, said bristle head including a longitudinal series of transverse rows of bristle tufts, said rows flaring progressively in opposite directions with respect to an intermediate row in said series, the free ends of the bristle tufts in said series terminating in a common plane, and a group of bristle tufts forwardly of said series of transverse rows comprising a plurality of tufts arranged symmetrically about a central tuft, the foremost tufts of said group extending beyond the forward end of said brush back.

GATES B. AUFSESSER.

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