United States Patent [19]

Smith

[11] **3,792,504**

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[54] **HYGIENIC TOOTHBRUSH**

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[52] **U.S. Cl.** ..... **15/167 R**
[51] **Int. Cl.** **A46b 9/04**
[58] **Field of Search** ..... 15/167 R, 167 A, 110, 160

[56] **References Cited**

UNITED STATES PATENTS

2,043,898	6/1936	Malcolm	15/167 R
2,186,005	1/1940	Casto	15/167 R
2,274,042	2/1942	Cosby	15/167 R
2,306,482	12/1942	Livingston	15/167 R
3,722,020	3/1973	Hills	15/167 R

FOREIGN PATENTS OR APPLICATIONS

695,325	9/1930	France	15/167 R

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Attorney, Agent, or Firm—Lloyd J. Andres

[57] **ABSTRACT**

A toothbrush with a formation of bristles arranged to comply with the shape of teeth and more particularly to clean the gum surfaces between teeth and the mating sides thereof.

3 Claims, 6 Drawing Figures

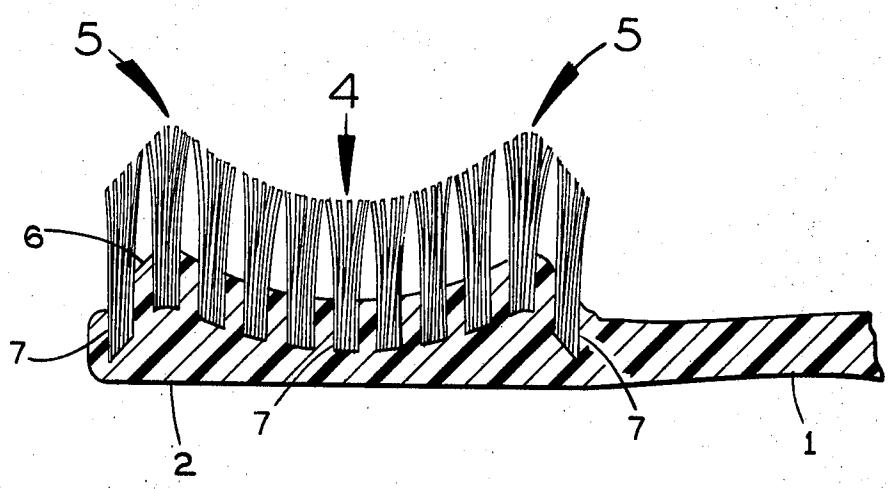
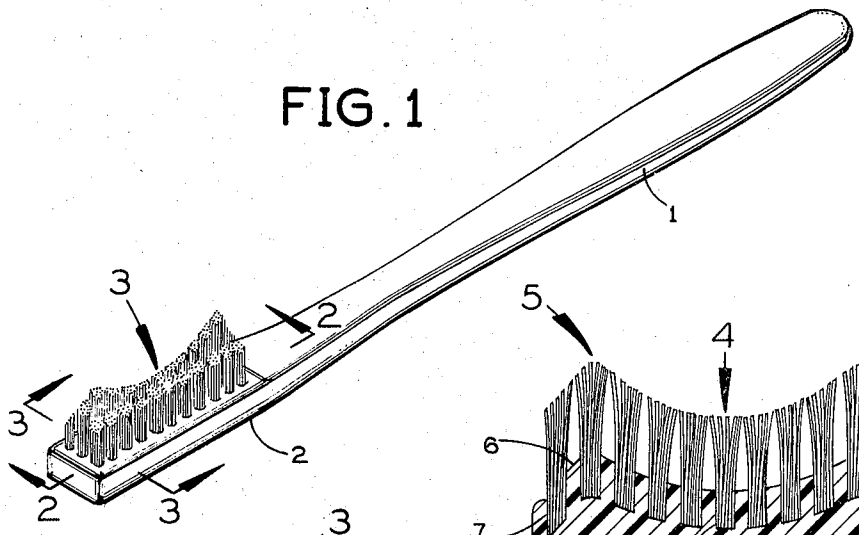


FIG. 1



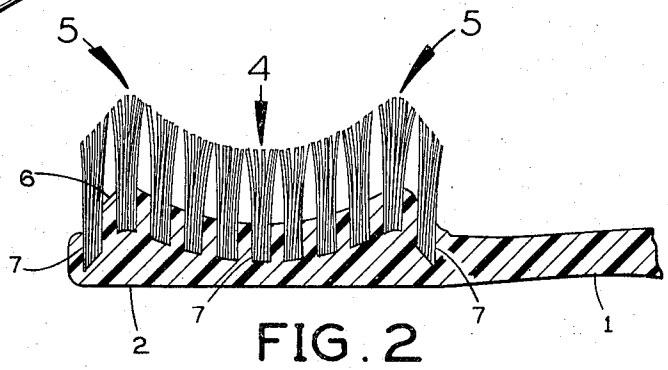


FIG. 2

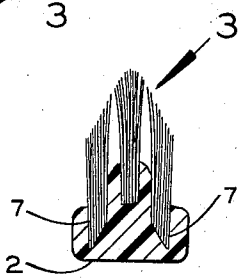


FIG. 3

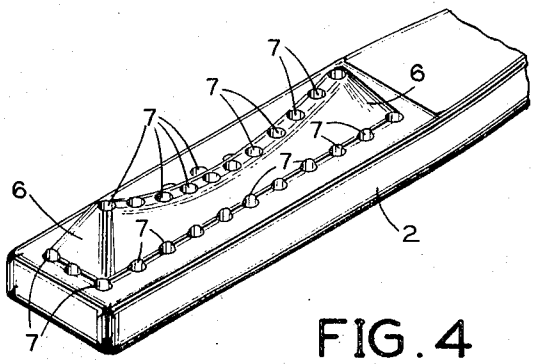


FIG. 4

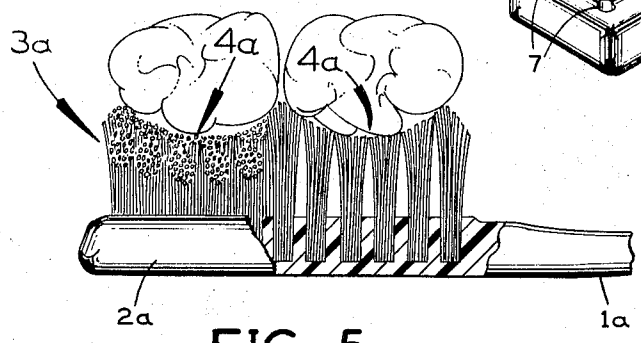


FIG. 5

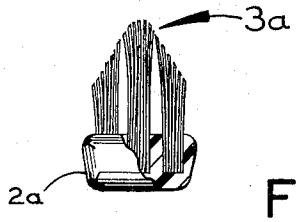


FIG. 6

HYGIENIC TOOTHBRUSH

This invention relates in general to toothbrushes and more particularly to a toothbrush having longitudinal arcuate shaped bristles to conform with the curvature of the teeth, providing extended bristles to clean between teeth and the surface areas of adjacent teeth, as well as stimulate the gum junctions by vertical reciprocation of the brush.

Prior toothbrushes presently available are provided with the main bristles generally in planar relation and in some instances a single group of tufts at the outer end of the bristle formation, which brush does not lend itself to cleaning the gums and the surfaces of adjacent pairs of teeth.

The present invention overcomes the above objections and disadvantages by the provision of bristles of sufficient stiffness and having the outer end portion of the bristles shaped to conform with the normal curvature of the teeth and terminating in tufts at opposite ends thereof, particularly adapted for cleaning between two pair of adjacent teeth and the tooth areas therebetween, as well as cleaning and stimulating gums, which construction is a principal object of the invention.

Another object of the invention is the provision of a toothbrush with the bristles therein in a longitudinal V-shape in which the ends of the bristles are in angular contact with the teeth for effective cleaning when reciprocated in a vertical direction.

A further object of the invention is the provision of the body portion of a toothbrush including an integral central longitudinal V shaped ridge for providing central spacing for three rows of tufts of bristles with each tuft thereof terminating in a substantially conical formation with peaks of bristles at opposite ends of each of the rows.

Another object of the invention is an alternate construction of a toothbrush wherein the tufts of three rows of bristles are in a longitudinal generally V shape bonded in a flat surface of the brush body. The bristles of the brush are formed into two longitudinal curvatures providing for a central peak at each end of the rows of bristles for cleaning between the teeth and the adjacent surfaces of two adjacent teeth, particularly when used to clean large molars.

These and other objects and advantages in one embodiment of the invention are described and shown in the following specification and drawing, in which:

FIG. 1 is a perspective view of the hygienic toothbrush in normal scale.

FIG. 2 is a fragmentary cross sectional side elevation taken through section line 2—2, FIG. 1.

FIG. 3 is a cross sectional end elevation taken through section line 3—3, FIG. 1.

FIG. 4 is a perspective fragmentary enlarged view of the bristle portion of the body of the brush shown in FIG. 1, without bristles.

FIG. 5 is a fragmentary cross sectional enlarged view of an alternate form of toothbrush with portions thereof broken away.

FIG. 6 is a front elevation of the brush shown in FIG. 5 with a portion thereof broken away.

FIG. 1 shows the toothbrush with a typical handle 1 and a bristle portion 2 thereof with a formation of bristles 3, such as nylon fiber, secured in tufts along the bristle portion 2, by a well known molding or insertion process. The tufts normally include ten to twenty bristles of 0.008 to 0.015 inches in diameter.

FIG. 2 illustrates the side elevation of the brush shown in FIG. 1, in which the central rows of tufts of bristles are arranged in a longitudinal arc 4 which provides like peak tufts 5 at each end of the bristle portion.

FIG. 3 shows the longitudinal V shape of all of the bristles 3, with the apex of the V terminating in a predetermined radius.

The FIGS. 2 and 3 illustrate the plurality of tufts as molded in the bristle portion 2.

FIG. 4 shows a central elongated inverted V shaped portion 6 having a curved apex molded integral with the bristle portion 2 of the handle, which is surrounded by bristle mounting holes 7, as well as a central rows of holes along the apex of the V shaped portion 6.

It is now apparent that the canine, premolar and molar teeth may be effectively cleaned including the gum and tooth junction thereof when the previously described brushes are reciprocated against corresponding teeth with a suitable dentifrice.

Both of the above described brushes may have bristles inserted and retained in previously molded holes by well known means and the shaping of the outer ends of the bristles into general V formation made after the bristles are bonded in the said body. Another well known method of installing tufts of of bristles comprehends center folding a single long length bristle into a sharp bend and forcing a plurality of folded bristles into a pre-molded hole in the brush body.

Referring to FIG. 5, the alternate toothbrush has a brush portion 2*a* of the handle with the bristles 3*a* formed into two longitudinal curves 4*a*—4*a*. The cross sectional view, FIG. 6 has the bristles in V formation, the same as shown in FIG. 3. It is apparent that the alternate form of brush, shown in FIGS. 5 and 6, will clean the entire frontal tooth as well as the spaces therebetween and the areas of adjacent portions of the teeth, particularly the molars.

It is to be understood that certain modifications in construction are intended to come within the teachings and scope of the above specification.

Having described my invention, I claim:

1. A toothbrush comprising a substantially straight plastic handle including an integral brush body means extending longitudinally from one end of said handle,

one side of said body means including an integral central ridge of predetermined length and height and uniform cross section and having a linear concave longitudinal shape of predetermined radius,

said one side of said body means including a marginal planar surface of predetermined width extending around and in junction with the base of said ridge,

a plurality of equi-spaced first holes in and along the top of said ridge radial curved with respect to said radius,

a tuft consisting of substantially a predetermined number of bristles bonded in each of said holes along said ridge normal to the top edge thereof,

a second plurality of holes around the said marginal planar surface and normal thereto positioned in close proximity with the said base junction of said ridge with the bottom of each of said holes convergent upward toward said ridge,

each of said second holes having like said number of bristles bonded therein forming a plurality of tufts with the upper end portions thereof terminating in an angle toward the top of said ridge.

2. The construction recited in claim **1** wherein the said ridge is molded integral with the brush body means and is centrally positioned along one side of said body means and terminates in a rounded outer edge of predetermined radius.

3. The construction recited in claim **1** wherein all bristles in each tuft are inserted and bonded in holes having right angled bottom surfaces and the opposite ends of the bristles cut into uniform length and forming a generally inverted longitudinal V-shape.

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