

[54] SINGLE-USE TOOTHBRUSH

240,817 9/1962 Australia15/187

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[21] Appl. No.: 101,540

[57] ABSTRACT

[52] U.S. Cl.15/104.94, 15/167 R, 15/187

[51] Int. Cl.A46b 1/00

[58] Field of Search...15/104.94, 187, 104.93, 167 R;
300/21; 132/84

A single-use toothbrush of molded plastic material, composed of a plurality of cylindrical clusters of bristles integrally molded with the body of the toothbrush and coated with a thin layer of dentifrice composition which is sprayed onto the bristles in an amount adequate for a single brushing only. Each cluster is composed of four bristles of approximately triangular section and is formed by bristles projecting from a cylindrical base of small depth which is bisected by a pair of rectangularly displaced diametral slots which define the inner surfaces of the bristles while the lateral surfaces of the latter are coincident with the periphery of the base. The size of the clusters and their spacing from each other impart an optimum degree of flexibility to the bristles.

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2 Claims, 6 Drawing Figures

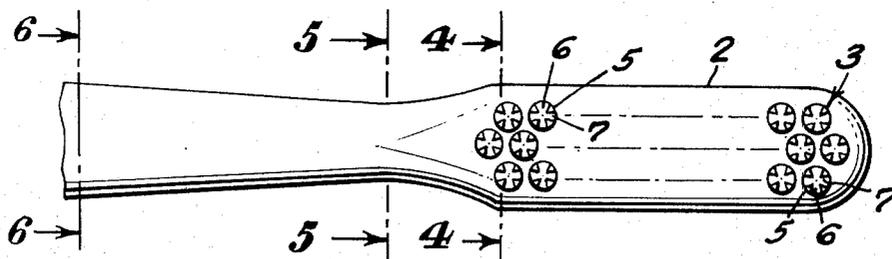


Fig. 1.



Fig. 2.

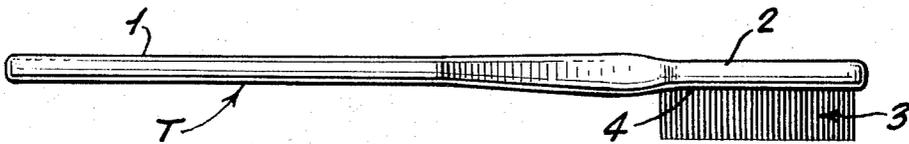


Fig. 3.

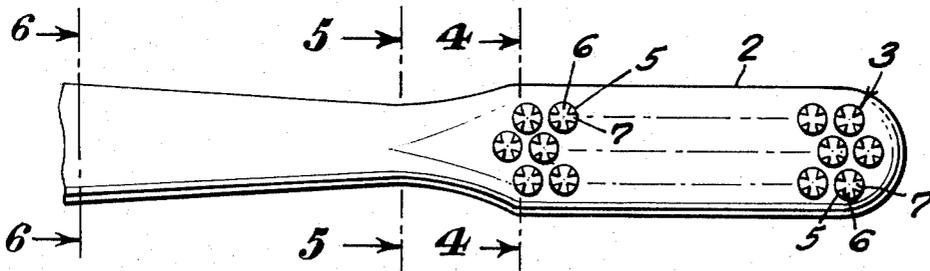


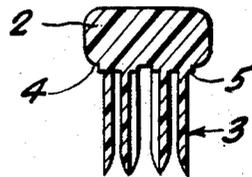
Fig. 5.



Fig. 6.



Fig. 4.



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SINGLE-USE TOOTHBRUSH

This invention relates to a single-use toothbrush formed of synthetic plastic material and more particularly to one formed with bristles molded integrally with the brush and coated with a dentifrice composition which is effective for a single brushing operation, and which is designed to be discarded thereafter.

It is the object of the present invention to mold a toothbrush composed of a handle at one end for convenient grasping, and a bristle portion at the opposite end wherefrom project a plurality of bristles which are capable of cleansing the teeth without undue irritation of the gums and which are spray-coated with a dentifrice composition so that a toilet item of low cost may be attained for a single use only.

The item of low cost may be dispensed from machines or distributed as a form of advertising in hotels, motels or other business establishments, or may be purchased economically for casual use by a traveller when the need therefor arises, and by all consumers that daily brush their teeth.

It is a further object of the invention to so correlate the physical characteristics of the molded plastic material, which may be a high density polyethylene, with the distribution of the individual bristle elements so that a light coating of the dentifrice composition, which is sprayed onto the bristles, is adequate for a single use only, so that after use, the brush is thrown away, thereby eliminating any possibility of infection. The bristles are formed in cylindrical clusters and are subdivided by four radial slots or by a pair of rectangularly displaced diametral slots, the dimensions of which, relative to the size of the clusters, provide adequate spaces between the bristles, so that the fluid dentifrice composition which is sprayed on the bristles in a light layer covers the resulting three faces of each bristle to provide a critically proportioned quantity of the composition, to make possible a single brushing of the teeth, following which the brush may be thrown away.

Other objects and purposes will appear from the detailed description of the invention following hereinafter, taken in conjunction with the accompanying drawings, wherein

FIG. 1 is a top plan view of the toothbrush in accordance with the invention;

FIG. 2 is a front elevation of Fig. 1;

FIG. 3 is an enlarged bottom view of the bristle portion of the toothbrush;

FIG. 4 is a vertical sectional view along line 4-4 of Fig. 3;

FIG. 5 is a vertical sectional view along line 5-5 of Fig. 3, and

FIG. 6 is a vertical sectional view along line 6-6 of Fig. 3.

The toothbrush T in accordance with the invention is formed of an integrally molded elongate handle portion 1 at one end thereof and a bristle portion 2 at the opposite end thereof. The cross-section of the handle portion is varied along the length thereof, as indicated in Figs. 5 and 6, to afford a convenient hand-hold for the user of the brush, and the top of the bristle portion 2 is contoured to provide a comfortable base for the bristles as the brush is moved in the mouth.

The bristles 3 are molded integrally and project from the bottom face 4 of the portion 2. These bristles are arranged in cylindrical clusters which project from cir-

cular bases 5 of small depth at the junction of the bottom face 4 of brush 2 and the bristles. These circular bases are offset from each other with four individual bristles extending from each base. Each circular base may be approximately one-sixteenth to three thirty-seconds inch in diameter and the bristles are formed by bisecting the clusters with a pair of rectangularly displaced diametral slots 6 and 7 of approximately three sixty-fourths inch in width, or four radial slots of greater dimension so that in effect each cluster of bristles is constituted by four bristles of triangular section which taper to points at the end of the bristles remote from the bases 5. The slots 6 and 7 may be of uniform width, or they may flare or widen in radial directions from the center to narrow the bristles at their outer sides, as shown in FIG. 3.

The diametral slots 6 and 7 enable the sprayed dentifrice composition to be applied to the juxtaposed faces of the bristles in each cluster, as well as to the outer curved faces of the latter.

The bristles project from the base of the brush for approximately three-eighths inch in order to permit a limited flexing thereof so that the teeth may be brushed without undue irritation of the gums.

An adequate brush area may be attained by the provision of approximately ten clusters which extend along the length of the bristle portion along each edge thereof spaced from each other approximately one-eighth inch apart, with one or more rows of bristle clusters between the outer rows. The adjacent rows of clusters are displaced longitudinally from each other to give rise to a staggered effect which provides an effective brushing area. The lateral spacing between the longitudinal rows may also be one-eighth inch apart, or slightly less.

Following the molding of the brush, the bristles are sprayed with a dentifrice composition having a suitable amount of detergent and abrasive ingredients in conjunction with wetting and flavoring agents.

The following formula has proven to be especially effective:

carboxymethylcellulose (120)	0.9 gm.
saccharin sodium	0.18 gm.
methyl paraben	
sodium lauryl sulfate	2.5 gm.
dicalcium phosphate	54.0 gm.
strontium chloride	5.0 gm.
glycerin	1.0 gm.
propylene glycol	18.0 gm.
water	13.5 gm.
mineral oil	1.0 cu. mm.
peppermint oil	0.7 cu. mm.
oil of pine	0.7 cu. mm.

The dentifrice composition may be prepared and applied to the bristles in following manner:

Dissolve the methyl paraben in the propylene glycol; wet the carboxymethylcellulose with the glycerin and then the propylene glycol solution to make a slurry; dissolve the saccharin sodium, sodium fluoride and strontium chloride in the water; add the aqueous solution to the carboxymethylcellulose slurry slowly while stirring (in a "Hobart" mixer), continuing stirring until a homogeneous gel results (heat may be used); add the dicalcium phosphate slowly to the gel while stirring until homogeneous; add the mineral oil, peppermint and pine oils and the sodium lauryl sulfate and mix until

evenly dispersed; (the paste may be milled and deaerated if necessary); add warm water of approximately 50°C. slowly, with constant stirring to a paste consistency until it becomes sufficiently fluid for spraying; introduce the warm mixture into a spray dispenser using a Freon propellant; spray on bristles of the brush and place the brush in a warm place of 30° to 40°C. to dry.

The spraying of the dentifrice composition onto the bristles results in a highly improved product over the practice of dipping the bristles into the composition, even in the case of molded plastic bristles.

I claim:

- 1. A single-use toothbrush of generally elongate shape, comprising
 - a. an integrally molded handle portion of synthetic plastic material with a bristle portion of generally rectangular outline at one end thereof,
 - b. a plurality of cylindrical clusters of bristles, of a length of approximately three-eighths inch, projecting from a face of said brush at said bristle portion to form said generally rectangular outline,
 - c. a cylindrical base of small depth at said face constituting the root of each cylindrical cluster of bristles having a pair of rectangularly displaced diametral slots extending from said base to divide each cluster into four bristles of triangular cross-section, with each bristle tapering to a point at the

- free end thereof remote from said base,
- d. each of said cylindrical clusters of bristles being of a diameter ranging from one-sixteenth to three thirty-seconds inches, with the width of the diametral slots being approximately three sixty-fourths inches,
- e. said bristle portion being constituted by three laterally spaced longitudinal rows of said cylindrical clusters, with the axes of the cylindrical clusters in one row being displaced in a longitudinal direction from the axes of the cylindrical clusters in the adjacent row, the displacement between the clusters in each row and the lateral displacement between the rows being of the order of one-eighth inch, and
- f. a coating of dentifrice material dispersed uniformly on all faces of said bristles in consequence of the spacing of said bristles from each other and from the bristles in the adjacent clusters to a degree sufficient to have the composition sprayed onto all surfaces of said bristles.
- 2. A device as set forth in claim 1, wherein said dentifrice material sprayed onto said bristles is of an amount sufficient for a single brushing operation only, and contains detergent, abrasive and preservative ingredients, as well as wetting and flavoring agents.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,691,585 Dated September 19, 1972

Inventor(s) CHARLES FLOM

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In column 2, following line 42, the formulation should read as follows:

carboxymethylcellulose (120)	0.9 gm.
saccharin sodium	0.18 gm.
methyl paraben	0.1 gm.
sodium fluoride	0.1 gm.
sodium lauryl sulfate	2.5 gm.
dicalcium phosphate	54.0 gm.
strontium chloride	5.0 gm.
glycerin	1.0 gm.
propylene glycol	18.0 gm.
water	13.5 gm.
mineral oil	1.0 cu. mm.
peppermint oil	0.7 cu. mm.
oil of pine	0.7 cu. mm.

Signed and sealed this 1st day of May 1973.

(SEAL)

Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents