

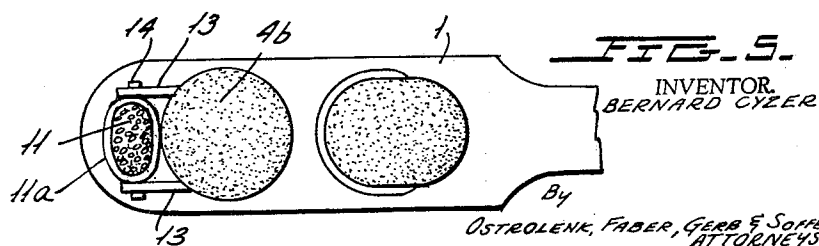
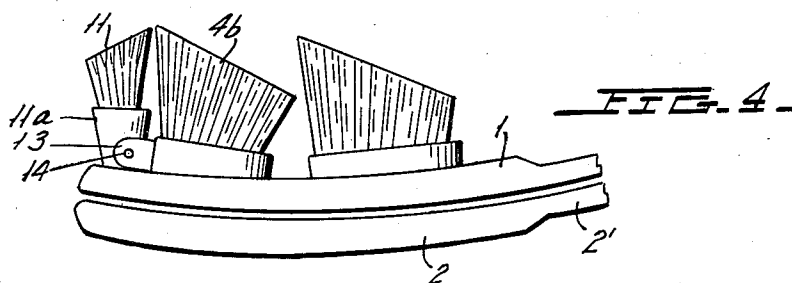
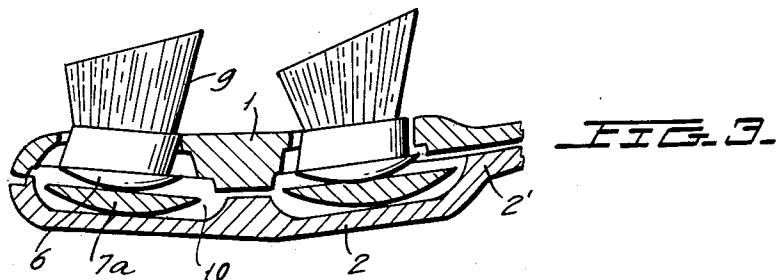
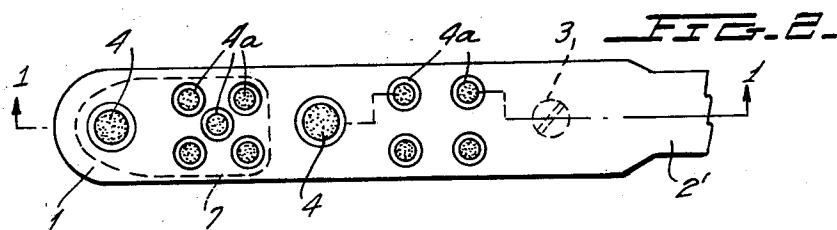
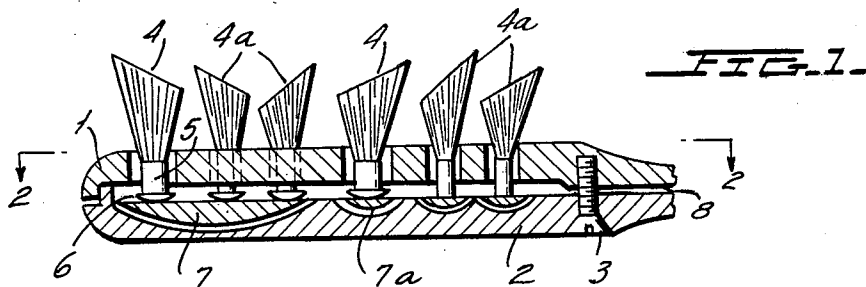
April 21, 1964

B. CYZER

3,129,449

TOOTHBRUSH WITH SHUTTLINGLY OSCILLATINGLY AND ROTATINGLY
MOVABLE CLEANING AND MASSAGING ELEMENTS

Filed Sept. 11, 1961



INVENTOR
BERNARD CYZER

By
OSTROLENK, FABER, GERB & SOFFEN
ATTORNEYS

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TOOTHBRUSH WITH SHUTTINGLY OSCILLATINGLY AND ROTATINGLY MOVABLE CLEANING AND MASSAGING ELEMENTS

Bernard Cyzer, Amidar 10, Hadar Joseph, Tel Aviv, Israel

Filed Sept. 11, 1961, Ser. No. 137,169

Claims priority, application Israel Sept. 13, 1960

3 Claims. (Cl. 15-28)

This invention relates to a toothbrush with shuttingly-oscillatingly and rotatingly movable cleaning and massaging elements.

This invention provides a toothbrush in which the present prophylactic principles for mouth cavity, teeth and especially for the intervals between the teeth together with the gums are taken into consideration. It consists of tooth-cleaning and gum-massaging brushing portions or equivalent elements, which are constructed to carry out a combined movement in all directions as soon as the toothbrush is pressed to the teeth while the handle is pushed back and forth with correspondingly straight semi-circular and circular movements. The brushing elements are mounted in sockets, which are in turn connected to the brush-head to carry out circular and oscillating movements while avoiding the harmful effects of excessive friction.

The present invention concerns a further development within the general idea of providing movement of the brushing elements relative to the brush-head with the view of diminishing undesired and harmful friction, and of permitting only such friction as is necessary for the cleaning and massaging action or simultaneously providing deep penetration of the brushing elements into the intervals between the teeth.

Accordingly this invention provides simultaneous shutting-oscillating-and circular movability of the brushing elements; the latter are loosely mounted within cylinder-shaped openings in the brush-head to carry out this desired motion.

The term brushing elements is used herein to denote bundles of natural or artificial bristles, or the single staffs or bundles of staffs (formed of rubber or similar material), which may possess the equivalent cleaning and massaging qualities.

Each brushing element is correspondingly mounted in an overturned cup-shaped holder. These holders have a cylindrically round wall-shape, which extends downwards to an outwardly outspread flat or vaulted bottom. The vault lies on a correspondingly concave surface, or with its highest point on an even, flat surface. Accordingly, the holder possesses one or more cylinder-shaped openings of various sizes. Between the bottom of the brushing element and its supporting surface there may be inserted a loose disc as a support. This disc is vaulted or convex on one side; and quite flat or even on the other side.

The brush can be designed as an integral part of the handle, or as a detachable or changeable part. In each of my embodiments, the brush will preferably consist of two cup-halves provided with screws or similar fastenings having sockets shaped to receive the brushing elements within a hollowed internal region of the cups. This design makes it possible to use the sockets as distributing chambers for the dentifrice which may be supplied by a container placed in the toothbrush handle (in the manner set forth in my copending U.S. patent application Serial No. 137,462, filed September 11, 1961, entitled "Toothbrush With Liquid Container," in the name of Bernard Cyzer). The shutting-oscillating, rotating combination of the brush elements enables the carrying out of movements in all directions, relative to the brush-head including rotation about their individual axes as

soon as the brush-head is moved into all directions or is simply pushed back and forth.

The invention is illustrated in the enclosed drawings as follows:

FIGURE 1 is a partial longitudinal section on the line I-I of FIGURE 2 of a toothbrush according to one form of the invention.

FIGURE 2 is a horizontal-longitudinal section of the toothbrush on the line II-II of FIGURE 1.

FIGURE 3 is a partial longitudinal section of a brush according to another form of the invention.

FIGURES 4 and 5 are lateral elevation and plan views respectively of a further form of the invention.

In the brush according to FIGURES 1 and 2, the brush-head consists of two oblong cups 1, 2 which pass into a handle 2' and are connected with each other by some suitable means, e.g., screws or the like 3. They include a number of hollows, which constitute sockets for the bases of the brushing elements. The particular toothbrush has two larger brushing elements 4 and nine smaller brushing elements 4a. Each of these brushing elements are joined in one or more bundles or bristles in cylinder-shaped holders 5. Each holder extends downwardly to a semi-spherical or vaulted bottom 6. In order to enable a better cleaning action and particularly a deeper penetration of the brush, the single bundles of bristles and also the groups of bundles of bristles are preferably cut at a "sharp angle." The holders with their vaulted bottom are inserted into the sockets inside the brush-head and the bristles project outwardly from the openings of the upper oblong cup. The vaulted bottoms 6 may directly interengage the lower internal surface provided by lower cup 2 as it is to be seen on the right side of FIGURE 1, or by the insertion of loose disks in the shape of semi-spherical segments 7. Each brushing element may have its individual disc 7a, as shown in FIGURES 1 and 3, or a disk is fixed under a number of the bottoms (left of FIGURE 1). In order to properly mate the vaults of the bottoms 6 and 7 and 7a, the discs are fixed in corresponding sockets of the lower half of the cup 2. The cylinder-shaped openings of the upper half of the cup about the holders 5 and also the entire socket between the two halves of the cups are much wider than the inserted disks 7 and 7a, so that they have free play in all directions. This enables the brushing elements to carry out at the same time the shutting-oscillating-and rotating movements about their individual axes, as soon as the brush-head together with the brushing elements are applied to the teeth and the gum with the handle being pushed straight, semi-circular or in circular movement, or simply by back and forth movements.

FIGURE 1 shows a dentifrice feed duct 8 for the dentifrice which extends between the two cup-halves 1, 2 in accordance with my aforementioned copending U.S. patent application Serial No. 137,462.

FIGURE 3 shows a brush-head which has only two large brushing elements 9, the principles of operation corresponding to that of FIGURES 1 and 2. The vaulted part 6 of each brushing element rests upon a loose intermediate disk 7a on its straight, flat side, while its convex side rests on the straight surface of the socket bottom. The sections of the bottom plane in the lower socket, on which the disks 7a rest, have a sloping meeting place, which makes the axes of the brushing elements lie inclined towards one another to thereby increase their cleaning action.

In the toothbrush of FIGURE 4 and FIGURE 5 element 11, which comprises a group of rubber staffs, is added to the cleaning and brushing element. This element 11 is movably fixed in a holder 11a which extends upwards from the upper edge of the brushing element holder by means of extensions 13 and which is inserted in-

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to the brushing element 4b by a hinge member 14 which passes through a suitable hole in the base of the holder 11a. It is also possible to provide this upwardly extending holder with bristles instead of rubber-staffs.

In the foregoing specification I have described preferred embodiments of my novel invention. Many variations and modifications will now be obvious to those skilled in the art, and I prefer therefore to be limited not by the specific disclosure herein but only by the appended claims.

I claim:

1. A toothbrush comprising a handle and a bristle carrying head; said head formed of a first and second oblong cup generally extending in a first direction, and so assembled to provide an inner space between opposed surfaces thereof; said first oblong cup containing cylindrical apertures having axes substantially perpendicular to said first direction, through which a plurality of bristle assemblies project their bristles outwardly with respect to said inner space; each of said bristle assemblies comprising a plurality of bristles held together at one of their ends by a cylindrical sleeve; said cylindrical sleeve having a base terminated by a convex base surface; said convex base surface operatively positioned to be freely movable about the bottom of said inner space; said bottom of said inner space being the inner surface of said second oblong cup; said cylindrical aperture having a significantly greater diameter than said sleeve to provide a substantial clearance whereby said bristle assembly freely oscillates about its respective one of said axes; said base including a portion extending perpendicular to its respective axis and dimensionally greater than said internal aperture di-

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ameter, whereby said base is kept within said inner space; at least one disc being disposed in a hollow part of said bottom of said inner space, facing at least one of said apertures, and at least one of said convex base surfaces resting on said disc; said disc having first and second surfaces communicating with said convex base surface and bottom of said inner space respectively, to facilitate said oscillating movement of said base about said axis.

2. A toothbrush according to claim 1, wherein said first surface and said bottom of said inner space are substantially flat and said second surface is convex.

3. A toothbrush according to claim 1, wherein at least one disc is disposed in a hollow part of said bottom of said inner space, a plurality of said convex base surfaces resting on said disc; said disc having first and second surfaces; said first surface of an extent to receive said plurality of convex base surfaces; said second surface communicating with said bottom of said inner space in a manner facilitating said oscillating movement of said bases about said axis.

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