

April 1, 1947.

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2,418,344

TOOTH BRUSH

Filed Jan. 12, 1945

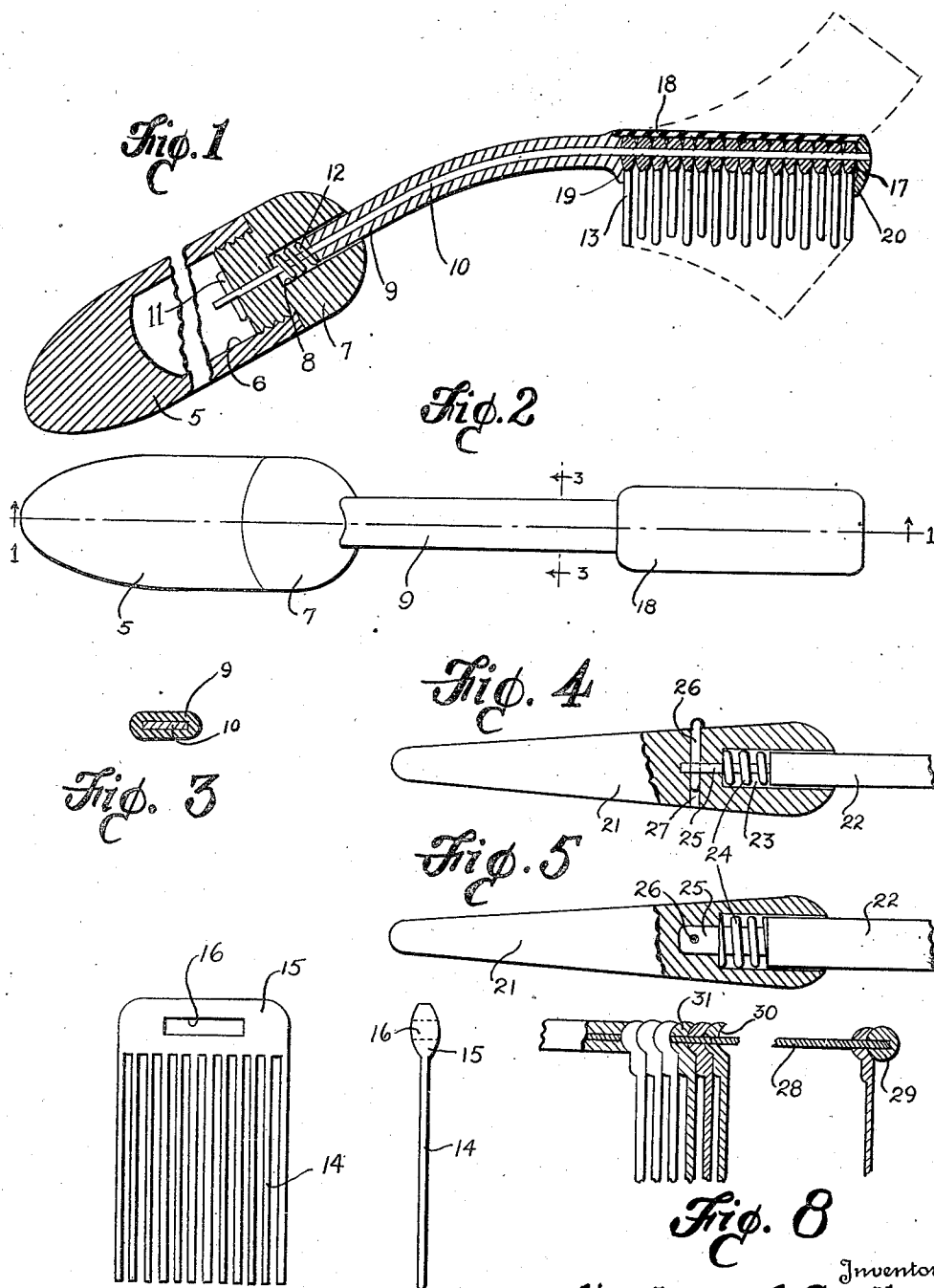


Fig. 6

Fig. 7

Fig. 8
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UNITED STATES PATENT OFFICE

2,418,344

TOOTHBRUSH

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Application January 12, 1945, Serial No. 572,469

3 Claims. (Cl. 15—187)

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The present invention relates to new and useful improvements in tooth brushes and has for its primary object to provide a brush head formed of removable and replaceable plastic teeth arranged to form bristles whereby the brush head may be replaced, when desired, or in which the segments forming the brush head may be removed for cleaning the same.

A further object of the invention is to provide a flexible mounting for the brush head adapted to respond to the forces exerted thereon during the brushing action to curve the brush head convexly or concavely to properly conform to the curvature of the inner or outer surfaces of the teeth and thus to more effectively clean the same.

A still further object of the invention is to provide means for attaching the brush head to a handle whereby the several parts may be detached and replaced when desired.

A still further object is to provide a device of this character of simple and practical construction, efficient and reliable in use, strong and durable, relatively inexpensive to manufacture and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which—

Figure 1 is a longitudinal sectional view.

Figure 2 is a top plan view.

Figure 3 is a transverse sectional view taken substantially on a line 3—3 of Figure 2.

Figure 4 is a fragmentary side elevational view of a modified handle construction and with parts broken away and shown in section.

Figure 5 is a similar view of another side of the handle.

Figure 6 is a view in elevation of one of the bristle segments.

Figure 7 is a vertical edge elevational view thereof, and

Figure 8 is a fragmentary sectional view of a modified construction for assembling the bristles.

Referring now to the drawings in detail and first with respect to the form of the invention illustrated in Figures 1 to 3, inclusive, the numeral 5 designates an elongated transversely rounded handle having a recess 6 formed at one end and closed by a plug 7 threaded in the end of the handle.

The outer end of the plug is likewise formed

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with a recess 8 adapted for snugly receiving one end of a flattened rigid tube 9, preferably of stainless steel or other suitable material and having a leaf spring 10 extending therethrough.

The inner end of the spring 10 extends through the plug 7 into the chamber 6 of the handle and is retained therein by means of a locking pin 11 inserted transversely through an opening in the spring.

A coil spring 12 positioned in the recess 8 of the plug and surrounding the spring 10 engages the inner end of the tube 9 to exert an outward force behind the tube.

The outer end of the spring 10 projects outwardly beyond the tube 9 and mounted on the outer end of the spring are a plurality of brush segments 13 constructed of suitable plastic material, each of the segments including a row of substantially closely spaced teeth 14 connected at one end by a solid head 15 having an elongated horizontally extending opening 16 therein for receiving the outer end portion of the spring 10 whereby to mount the teeth 14 of the segments 13 in substantially close spaced relation on the outer end of the spring substantially in the form of bristles of a brush.

A metal cap 17 is welded or otherwise fixedly secured on the outer end of the spring 10 to retain the bristle segments 13 on the spring 10, while the coil spring 12 forces the tube 9 outwardly against the inner end of the bristles to compress the bristles between the cap 17 and the tube.

The back of the brush formed by the bristle segments 13 may be provided with a rubber or other flexible cover 18.

The tube 9 is preferably curved into a desired shape as indicated in Figure 1 of the drawings and the outer end of the tube may be flared at the inside of the curve as indicated at 19 to project downwardly at the inner end of the brush to increase the rigidity of the teeth or bristles thereof while the lower edge of the cap 17 also extends downwardly against the front end of the teeth or bristles of the brush as shown at 20 to likewise increase the compactness in the holding together and substantial stiffness yet limited yieldability in the rigidity thereof.

The flexibility of the outer end of the spring 10 on which the bristles are mounted will permit the same to flex either convexly or concavely as indicated by the dotted lines in Figure 1 of the drawings to conform to the curvature of the inner or outer surfaces of the teeth during the brushing thereof.

Likewise certain of the bristle segments 13 may be constructed for uni-flexibility to possess the characteristic of limiting the bending of the bristles in one direction in order to prevent crowding of the bristle ends during the flexing of the brush.

In the form of the invention illustrated in Figures 4 and 5 of the drawings, a handle 21 of tapering construction is provided having the rigid tube 22 inserted in a socket 23 in its outer end and behind which the coil spring 24 is positioned, the flat leaf spring 25 carried by the tube projecting inwardly of the handle beyond the chamber 23 and retained in position by means of a locking pin 26 extending transversely through an opening 27 in the handle.

In Figure 8 of the drawings I have illustrated a modified construction for mounting the bristles on the outer end of the leaf spring 28 by embedding the end of the leaf spring securely in a plastic ball 29, the ball being seated in a socket 30 formed in one side of the head 31 of the outermost one of the bristle segments. The opposite surface of the head 31 is rounded bulbously for nesting in the socket 30 of an adjacent head of the segments.

From the foregoing it will be apparent that the bristle segments 13 may be removed in an inward direction from the outer end of the leaf spring 10 for replacement or cleaning purposes by removing the plug 7 from the handle and removing the pin 11 from the inner end of the spring 10. The removal and replacement of the bristle elements in the other structural modification is accomplished similarly by detaching the handle element from the inner ends of the respective spring elements 22 and 28.

The coil spring 12 exerts its influence on the inner end of the tube 9 to compress the bristle segments between the outer end of the tube and the cap 17. The spring element 24 is similarly effective.

In view of the foregoing description taken in conjunction with the accompanying drawings it is believed that a clear understanding of the construction, operation and advantages of the device will be apparent to those skilled in this art. A more detailed description thereof is accordingly deemed unnecessary.

It is to be understood, however, that even though I have herein shown and described several embodiments of my invention, that the same is susceptible of other changes fully comprehended by the spirit of the invention as herein described, and the scope of the appended claims.

Having thus described the invention, what I claim is:

1. A tooth brush comprising a flat rigid tube, a flat leaf spring slidably mounted in the tube and projecting from each end of the tube, a head on the outer end of the spring, a plurality of flat plastic segments having teeth formed at one edge and provided with an opening adjacent an op-

posite edge for loosely mounting on the outer end of the spring with the segments positioned face to face with each other, a handle slidably receiving the inner end of the tube and leaf spring, a pin transversely of the inner end of the leaf spring to anchor the latter in the handle, and a coil spring on the inner end of the leaf spring and exerting its influence against the inner end of the tube to compress the segments between the head and the outer end of the tube.

2. A tooth brush including a handle section and a brush section, said brush section being formed of a group of toothed flat plastic segments substantially in the form of combs, the segments held in assembled relation with their body base portions fitted facewise rockably against each other normally stiffly in alignment but capable of limited flexion in conformity to tooth contour in the mouth of the user, the base portions of the segments having aligned angular apertures therein through which an elongated spring element angular in cross-section is supportingly threaded, a rigid tubular handle extension through which said elongated spring element is fitted longitudinally slidable and against the outer end of which the spring element holds the brush section assembly, and means for cooperatively supporting the inner end portions of said tubular handle extension and said elongated spring element on the handle section proper, said means including another spring element normally urging said tubular handle extension and said elongated spring element longitudinally relative to each other so as to effect and control the holding of the brush section assembly against the outer end of the tubular handle extension.

3. A tooth brush structure as set forth in claim 2, wherein the base portions of the respective brush section segments are such that one face of each segment is of convex form and the opposite face thereof is curvedly concave whereby the rockable contact of the one segment against the other in the assembly is such that limited rocking movement is possible between the assembled segments but independent longitudinal movement of the one segment relative to the other and transversely of the supporting elongated spring element in one direction is prevented.

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