Jan. 5, 1937. W. H. DOYLE 2,066,772

TOOTH BRUSH

Filed April 27, 1935

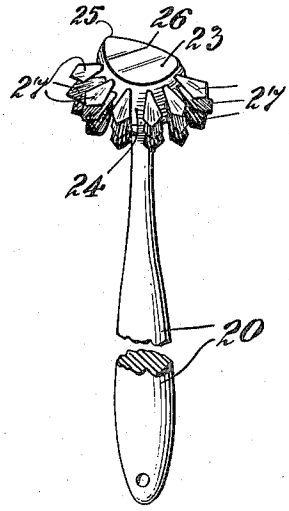


Fig. 1.

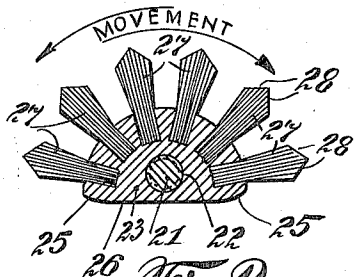


Fig. 2.

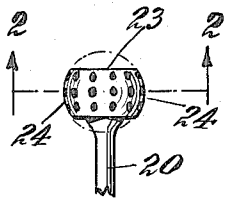


Fig. 3.

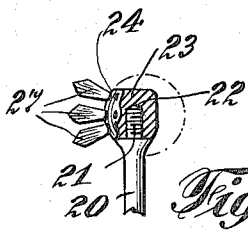


Fig. 4.



Fig. 5.

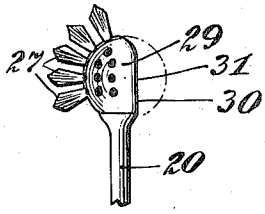


Fig. 6.

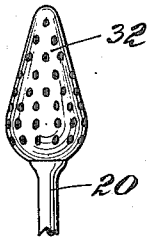


Fig. 7.

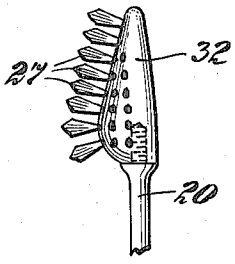


Fig. 8.

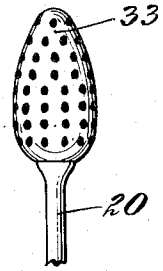


Fig. 9.

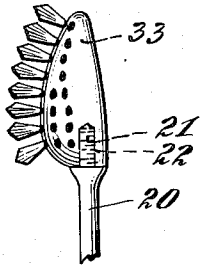


Fig. 10.

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Patented Jan. 5, 1937 2,066,772

UNITED STATES PATENT OFFICE

2,066,772

TOOTH BRUSH

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Application April 27, 1935, Serial No. 18,671

4 Claims. (Cl. 15—167)

This invention relates to tooth brushes and is herein shown as embodied in a head of a novel shape which may be adapted to be removably attached to a suitable handle.

According to the present invention the brush head is curved on the side which faces the teeth or gums so that the ends of the bristles form segments of circles around the axis of the brush handle, or nearly around that axis.

The segments of the circles of the brush bristle ends are shown as extending along arcs of less than a semicircle around the axis, thus leaving the back of the bristle-carrying surface smooth so that it cannot irritate the mouth or gums or tongue.

The ends of the bristles are shown as lying along longitudinal curves in planes passing through the same axis, or passing almost through the axis, so that they fit the faces of adjacent teeth.

When the handle of the brush is rotated against teeth in the mouth, the successive tufts of bristles in any segment sweep uniformly over the tooth they face and thus are all effective almost equally in cleaning the tooth against which they bear, but adjacent segments are set in such planes that they bear no more heavily against the adjacent teeth, or bear less heavily against them, thus insuring that the central row of bristles is highly effective.

The surfaces of the brush body which carry the bristles are preferably curved parallel to the ends of the bristles, with the result that the bristles do not need to be trimmed to different lengths in the different tufts, but the tufts may all be of the most effective length.

Other features and advantages will hereinafter appear.

In the accompanying drawing:

Figure 1 is a perspective view of one form of brush.

Figure 2 is a section of the brush on the line 2—2 of Figure 3.

Figure 3 is a face view of the brush head omitting bristles and showing the handle connection.

Figure 4 is a side view of a brush according to Figure 3 with part of the head broken away.

Figure 5 is a front view of an alternative form.

Figure 6 is a side view of the brush of Figure 5.

Figure 7 is a front view of another alternative form.

Figure 8 is a side view of the brush of Figure 7.

Figure 9 is a front view of another modification.

Figure 10 is a side view of the brush of Figure 9.

The handle **20**, which may be of any desired form, is shown as attachable to any form of brush head shown, by the threaded end **21** which screws into a socket, **22**, see Figure 4. The head **23**, shown in Figures 1 to 4, is a segment of a sphere, which will often be satisfactory if ⅝ inch in diameter, cut down to leave a 90° face **24**, and the segment being mostly cut away at **25**, so as to leave a fairly flat, slightly rounded back **26**, rounded at its edges.

In the form shown, believed to be the preferred form, the head **23** carries three rows of bristle tufts **27** approximately equally spaced in rows, each row lying in a radial plane and having its center on the axis of the handle **20**. The handle is threaded so it projects radially from the center of the sphere from which the segment head **23** was cut and is removable. As seen in Figure 4, the six tufts **27** of bristles of each row project almost radially from the surface of the head **23**.

The brush is preferably used by rotating approximately around the handle axis about 90° as indicated in Figure 2. The brush shown, when thus used, effectively cleans the teeth without irritating the tissues of the mouth, because the nearly flat back **26** slips smoothly over the tissues.

The bristles are shown as covering a zone of not more than about 90° of the periphery of the brush around the handle to avoid carrying bristles against the more sensitive tissues of the mouth. The tufts shown are $\frac{3}{16}$ of an inch long from the brush head face to the base of the slanting end of the tufts and the slanting faces **28** of the tufts are shown $\frac{1}{16}$ inch on a face.

The brush head **29** shown in Figures 5 and 6 is similar to the brush of Figure 1, except that the segment has become substantially a whole hemisphere, shown as flattened at **30** to receive the handle **20**, and having no bristle tuft at the opposite end or pole, but carries three rows of nearly radial bristle tufts, six tufts in a row, and one row of five tufts, and one row of three tufts, all tufts of each row lying in a single axial plane, between the handle and the opposite pole. The tufts of each row lie in a single radial plane. The back **31** of the head **29** is flattened, though somewhat rounded, like the back **26**.

The brush head **32** shown in Figures 7 and 8 is nearly a segment of a sphere adjacent the screwed-in handle **20**, but tapers off to what is approximately a cone, with nearly radial tufts **27** of bristles in radial planes, six tufts in each of three planes, and, one, two, three, four and five tufts in the other respective planes.

The brush head **33** shown in Figures 9 and 10 is substantially an oval with six nearly radial

tufts of bristles in each of four radial planes five tufts in the next two radial planes, and four and three tufts in the last two planes respectively.

Having thus described certain embodiments of the invention, what is claimed is:

1. A tooth brush having a handle and a detachable head in the form of a segment of a sphere including a substantially spherical front surface and a flattened back, and several rows of bristle tufts set in rows upon the front surface so that all the tufts of a row lie in a plane perpendicular to the axis of the handle and the bristle tufts form segments of circles around the axis of the handle.

2. A tooth brush having a handle and a head in the form of a segment of a sphere including a substantially spherical front surface, and a tapered extension of the front surface and a flattened back for the whole head, and several rows of bristle tufts set in rows upon the front surface so that all the tufts of a row lie in a plane perpendicular to the axis of the handle and the bristle tufts form segments of circles around the axis of the handle.

3. A tooth brush having a detachable handle and a head in the form of a segment of a sphere including a substantially spherical front surface and a tapered extension of the front surface, and a flattened back for the whole head, and several rows of bristle tufts set in rows upon the front surface so that all the tufts of a row lie in a plane perpendicular to the axis of the handle and the bristle tufts form segments of circles around the axis of the handle.

4. A tooth brush having a handle, a detachable head at least a portion of which includes a front surface in the form of a segment of a sphere and a flattened back, and several rows of bristle tufts set in rows upon such spherical portion of the front surface so that all of the tufts of a row lie in a plane perpendicular to the axis of the handle and the bristles form segments of circles around the axis of the handle.

WILLIAM H. DOYLE.