Nov. 1, 1927. 1,647,453

P. M. KRANTZ

TOOTHBRUSH

Filed Jan. 24, 1927

Fig. 1.

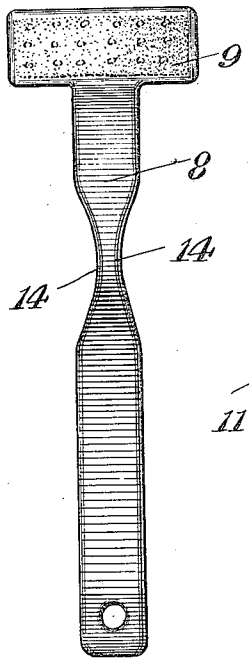


Fig. 2.

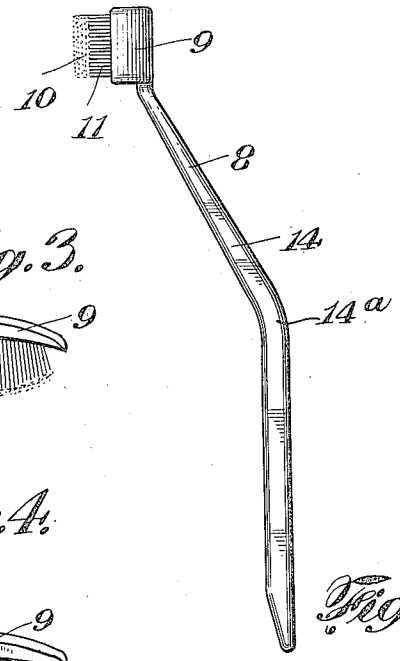


Fig. 3.

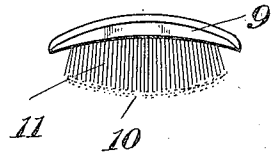


Fig. 4.

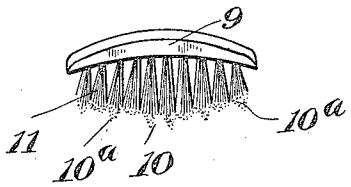


Fig. 6.

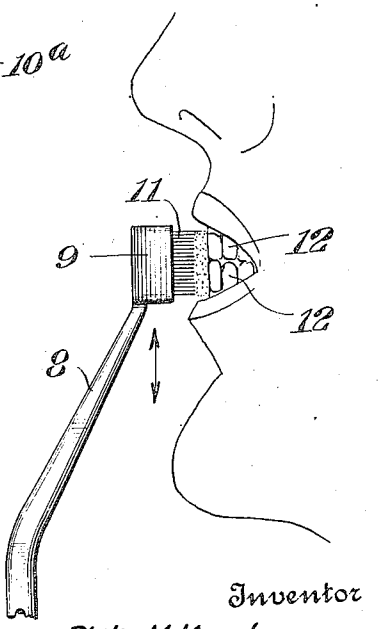
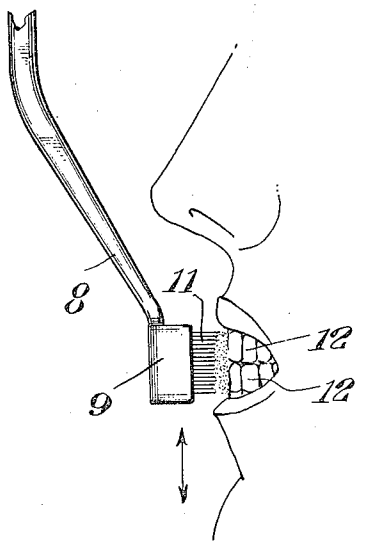


Fig. 5.



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UNITED STATES PATENT OFFICE.

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TOOTHBRUSH.

Application filed January 24, 1927. Serial No. 162,978.

This invention relates to brushing implements, and more particularly aims to provide a new and improved toothbrush, of the type having an elongate handle and preferably a single brushing head at one end of the handle; with the handle and the head, and also the bristle-side or other brushing face of the head, so shaped, and with these elements so relatively arranged, that satisfactory tooth brushing may be had adapted to satisfy the following objects, mainly:

(1) The working face of the head may be applied to the teeth and the latter scrubbed by reciprocating movement of the handle, or by a lengthwise substantially up and down "pumping" thereof.

(2) Such scrubbing of the teeth may be rapidly performed, relative to a plurality of the teeth at once, but entirely or principally in an up and down brushing direction, that is, by a travel of the brushing elements in a direction substantially parallel to the inter-tooth spaces or crevices.

(3) Such scrubbing may be performed, with equal facility, with regard to both the anterior and the posterior or lingual surfaces of all the teeth and their inter-tooth spaces.

(4) Such scrubbing may be performed, thoroughly to clean the teeth, and the outer or inner surfaces of a plurality of the teeth at once, particularly as to food particles and other deposits in or near said spaces or crevices, between all the molars as well as between the other teeth, and at the same time with exceeding rapidity.

(5) Such scrubbing may be performed while at intervals easily sidewisely shifting the brush so as gradually to transfer the scrubbing zone from one end tooth of a line being scrubbed to a new tooth next to the tooth at the other end of said line.

(6) Such scrubbing may be performed, not only as to the front and back surfaces and inter-tooth spaces of all the teeth, both those in the upper as well as the lower jaw, but by at will shifting the handle relative to the head, so that during some of the up and down pumping movements the handle may be lowermost and the head uppermost and during other of such movements the handle may be uppermost and the head lowermost, thus with equal efficiency to brush toward both the upper and lower gum lines.

(7) Such scrubbing may be performed, to satisfy all the six desiderata just mentioned, without the slightest impediment to the aforesaid pumping movements of the handle, either from the chin below such teeth, when the handle is lowermost, or from the nose above such teeth, when the handle is uppermost.

Various other objects and advantages of the invention than those hereinabove mentioned will be specifically pointed out or will be apparent hereinafter in the course of the below detailed description of the forms of the invention shown, in the accompanying drawing, as variations of a preferred one of of the various possible embodiments of the invention; it being understood, of course, that such form is merely illustrative of one combination and arrangement of parts well calculated to attain the objects of the invention, pursuant to present preference, and hence such detailed description of such form is not to be taken as at all defining or limiting the invention itself. That is to say, the scope of protection contemplated is to be taken from the appended claim, interpreted as broadly as is consistent with the prior art.

In the accompanying drawing:

Fig. 1 shows such form in side elevation;

Fig. 2 shows the same in end elevation;

Fig. 3 is a top plan view of the head of Figs. 1 and 2;

Figure 4 is a similar view, but showing a slightly different variation of shape in regard to the working face of the head; and

Figs. 5 and 6 are side elevations showing use of the brush on the outer surfaces of the teeth, Fig. 5 illustrating the line of extension of the handle when the head is lowermost and Fig. 6 showing the line of extension of the handle when that part is lowermost.

Important features of the invention are the shapings and relations of the handle 8, the head 9, and the working face of the latter. Such working face is indicated at 10

in Figs. 2 to 5. Certain of these shapings and relations are merely preferred, and hence may be considerably varied within the scope of the invention; others, however, are essential to the ideal performance of the new tooth-brush, as will hereinafter be pointed out or obvious. Nevertheless, the scope of protection contemplated, is to be taken solely from the appended claim; which statement is now repeated for purposes of emphasis.

As the new tooth-brush is shown in the drawing, the handle 8 and the convex head 9, viewed together in side elevation, clearly resemble the letter T, of which the cross-bar is the head and the staff is the handle.

This T-shape of the brush facilitates making the handle slender and supple enough for easy grasp and resilient dirigibility of the head, and, further, insures that at both sides of the root end of the handle, side portions of the head will project to an extent to help easy reaching of the teeth at the extreme rear of the oral cavity without any uncomfortable stretching of the mouth opening. Also, with the head of the width indicated, a desirable function for the head, of being applicable to brush at once approximately as many teeth as is possible with the common tooth-brush, is provided for.

Note, again, that the head 9, at its side opposite to the side carrying the brushing elements or means,—such means being here shown, as is preferable, as bristles 11,—is convex. This convex side of the head will hereinafter be referred to for convenience as the back of the head. Note, further, that the convexity of the back of the head is primarily along the length of the head, that is, substantially at right angles to the line of extension of the handle 8. Thereby, the shape of the back of the head is made to conform to the lip and cheek-wall boundaries of the oral cavity.

The working face of the brush, by which is meant the face defined generally by the free ends of the bristles 11 or the like, is preferably also longitudinally convex, as indicated in Fig. 3, and preferably also interrupted at intervals by pointed and protruding subdivisions as indicated at 10^a in Fig. 4; these subdivisions being spaced by distances equal to the average width of the ordinary human tooth. The elements 10^a then are adapted to act diggingly in regard to the inter-tooth spaces or crevices.

Thus, according to the showings of Figs. 3 and 4, the head 9 is convex longitudinally, on both sides. Desirably also, as indicated in the drawing, the degree of convexity of the back of the head is somewhat less than that of the working face of the brushing means on the head; while the latter is preferably convexly arched so as to conform to the several dissimilar archings of the teeth around the gum lines, at the inner and outer surfaces of the teeth.

With the head applied to the outer surfaces of the teeth 12, as shown in Figs. 5 and 6, or applied to the inner surfaces of the teeth of the upper or lower jaw with such jaws parted in a manner which will be clear, handle 8 at its root-adjacent portion has a rather sharp angled divergence from the vertical (assuming the tooth surfaces to be vertical, as shown). This handle portion is preferably more or less straight, and is cut away at opposite sides, as indicated at 14; while the entire handle is desirably completed by a free-end portion beyond such cut away portions substantially vertical when the portion is arranged as last described. Such an offset arrangement permits the fingers to grasp the handle at the cut-away portion, to secure a better grip there, and to arrange the entire hand around the handle so that hand and handle together, whether the brush is arranged as shown in Fig. 5 or as shown in Fig. 6 for working on the outer surfaces of the teeth, or is similarly arranged for working on the inner surfaces of the teeth, will at all times be out of the way of the chin, nose and all parts of the facial anatomy.

The brush is used, say, by first applying the same as shown in Fig. 6, and then giving straight up and down thrusts of the handle 8. When, desired, the brush may be then swung around through 180°, so that the handle 8 is uppermost, as shown in Fig. 5, and worked as before. In both these cases, during up and down pumping of the handle as indicated by the arrows of Figs. 5 and 6, the brush is gradually moved around the gums from end to end of the latter. Similarly, on separating the jaws to separate the teeth, and with the brushing face of the head now facing outward, the inside surfaces of the teeth and gums, may be quickly and thoroughly brushed with equal facility.

Inasmuch as many changes could be made in the above constructions, and different embodiments of my invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the language contained in the following claim is intended to cover all the generic and specific features of the invention herein described and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

I claim:

A tooth-brush including an elongated handle, a brush head formed at one end thereof and providing a T-head thereon, said head

being concave-convex in its length and having bristles projecting from the concave face thereof, the working surface of said bristles being trimmed to present a convex surface defining an arc substantially coincident with the arc defined by the convex rear face of said head, said handle from a point near said head being acutely directed at an angle away from the bristles of said head and at a point slightly less than one-half of its length measured from the head to the free end thereof being bent to a plane substantially parallel with the plane of said head, as and for the purposes described.

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