Aug. 20, 1929. P. H. MITCHELL 1,724,955

TOOTHBRUSH

Filed Jan. 17, 1927

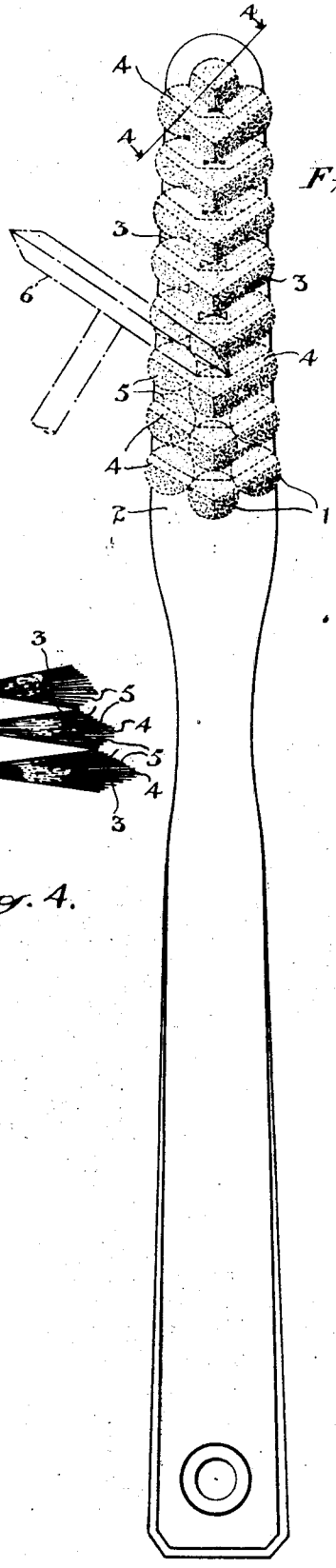



Fig. 2.

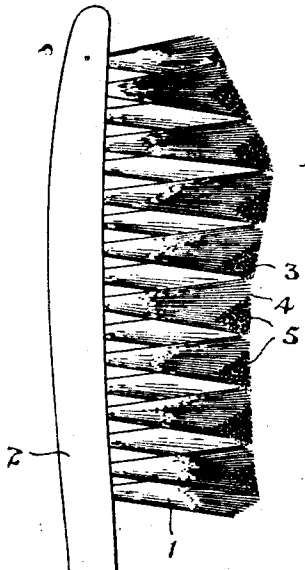
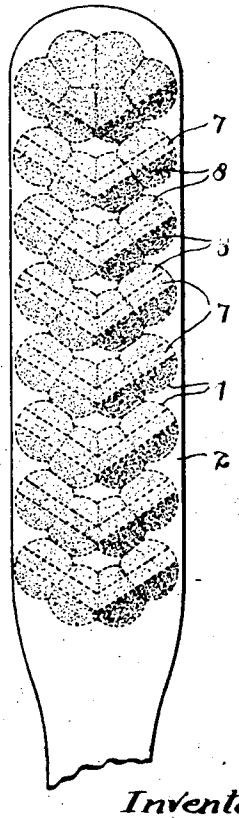



Fig. 1.




Fig. 4.

Fig. 3.




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# UNITED STATES PATENT OFFICE.

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## TOOTHBRUSH.

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The principal objects of the invention are, to devise a tooth brush which will produce the maximum efficiency in the cleaning of the exposed tooth surfaces, and to accomplish a massaging effect on the gums which will maintain a healthy condition.

The principal feature of the invention consists in forming the contact surfaces of the bristles of the brush to present a plurality of obliquely disposed serrated ridges adapted to produce a wiping effect by the bristles, transverse to the direction of movement of the brush.

In the accompanying drawings, Figure 1 is an enlarged side elevational view of a brush constructed in accordance with this invention.

Figure 2 is a plan view of a brush illustrated in Figure 1 showing diagrammatically the method of cutting the bristles to form oblique serrations in the top surface.

Figure 3 is a plan view showing the arrangement of the obliquely cut bristles in a four row bristle brush.

Figure 4 is a sectional detail of the tufts taken on the line 4—4 of Figure 2.

In the construction of tooth brushes the bristles are usually arranged in three or four rows and in the three row brush the tufts of the centre row of bristles are offset in relation to the outer rows of tufts, and it has been common practice to point the bristle tufts both longitudinally and transversely.

The present invention proposes to cut the tops of the bristles in such a manner that they will present bevelled surfaces extending obliquely inward from both sides to the centre line of the brush so that when the brush is moved longitudinally over the teeth in one direction, the obliquely disposed apexes of the pointed bristle tufts will spread outwardly and in the reverse direction they will draw inwardly, thereby causing the bristle ends to move over the teeth in two directions.

In the carrying out of the invention, the brushes are formed with the bristle tufts 1 secured in the back 2 in the usual manner.

When the tufts are arranged in three rows with the centre row staggered in relation to the outer rows, a practically solid body of bristles is presented at the top or free ends of the bristles.

Channels 3 of vertically V-shaped formation are cut into the bristles in an oblique direction from both sides, said channels meeting in the centre line of the brush. These channels are preferably cut substantially uniformly either side of the vertical axis of the tufts, leaving a top plane 4 of bristle ends presenting a substantially horizontal surface.

On either side the incline planes 5 slope away, as illustrated in detail drawing of Figure 4.

In the plan illustrated in Figure 2 of the drawings the method of cutting the V-shaped grooves diagonally into the tufts is illustrated as being effected by a rotary cutter 6 which cuts into the tufts at an angle oblique to the longitudinal axis of the brush and as thus illustrated the cutter cuts in to a point slightly past the centre axis, first on one side and then on the other, oppositely arranged cutters of course being provided, but while this method is shown by way of example, other methods of cutting may be devised.

In a four row brush the bristle tufts are preferably arranged with the two inner rows offset or staggered in relation to the outer rows but arranged and in transverse pairs.

This arrangement of the tufts presents a solid body of bristles in oblique angular directions extending in from both sides and the tufts are trimmed or cut by suitable cutters both sides from the top.

Flat top surfaces 7 similar to the surfaces 4 are preferably formed on the tufts—which are of substantially V shape with the sides 8 sloping down both ways therefrom.

It will be seen that with brushes constructed as described the broad V-shaped bevelled tuft constructions present the obliquely disposed top surfaces in such a way that when the brush is moved endwise toward the front end of the brush, the V-shaped bristle structures will spread outwardly, thus moving over the teeth in a transverse direction as well as in the main direction of travel of the brush. In other words, the broad V-shaped bristle structures will spread laterally and on the reverse movement of the brush the V-shaped bristle structures will be constricted laterally inward, causing reverse movement of the bristle ends over the tooth surfaces.

The advantages to be gained by a brush construction such as described are obviously conducive to more effective cleaning of the tooth surfaces and effecting a smooth massaging of the gums on the return movement.

What I claim as my invention is:

1. A tooth brush having channels in the bristle tops, said channels extending obliquely forward from each side of the longitudinal centre line of the brush.

2. A tooh brush having rows of parallel channels in the bristles, said channels extending inward and rearward from each side of the brush at an oblique angle to the longitudinal centre line of the brush and meeting thereat to form the bristle extremities in plan into longitudinally spaced V-shaped ridge formation with their apexes each arranged on said longitudinal centre line of the brush.

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