

March 10, 1931.

L. E. CHURCH

1,796,001

TOOTHBRUSH

Filed April 23, 1929

FIG. 7.

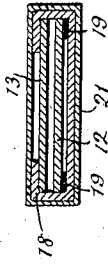


FIG. 1.

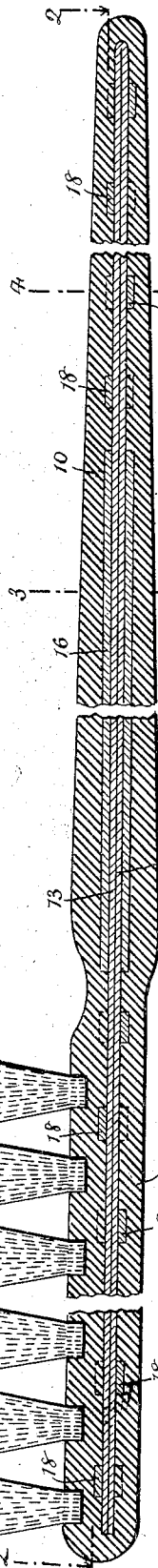
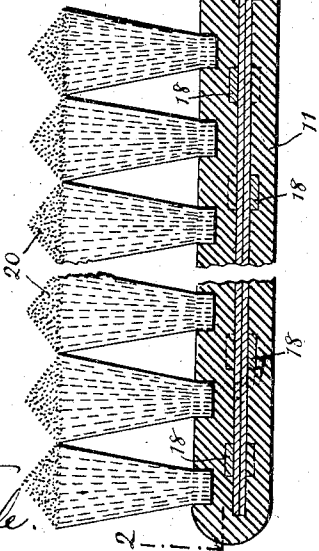


FIG. 2.

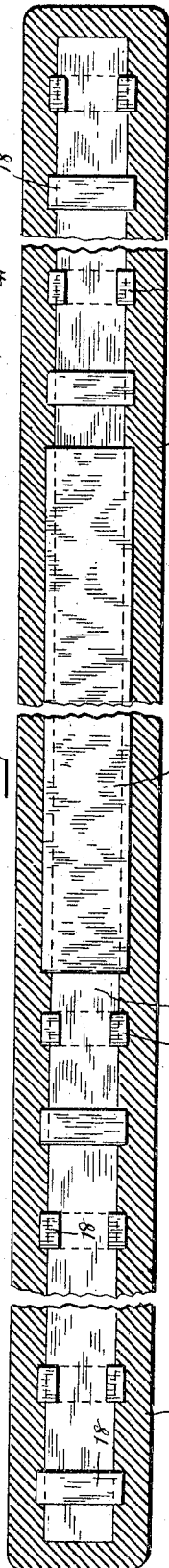


FIG. 3.

FIG. 4.

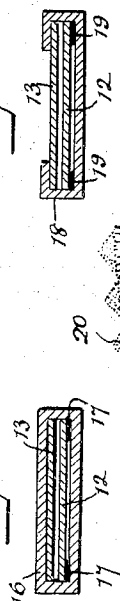


FIG. 5.



FIG. 6.

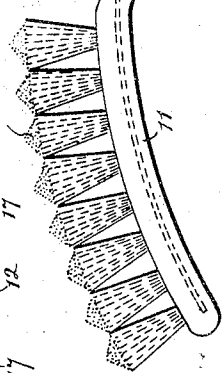
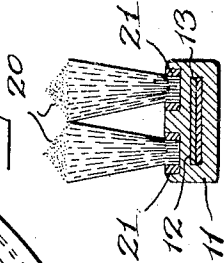


FIG. 20.



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TOOTHBRUSH

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This invention relates to the class of tooth brushes.

The principal object of the invention is the production of a tooth brush for the purpose of cleaning the teeth and gums, designed and adapted to be flexed, bent or warped, at the will of the user to arch the end having the bristles, to make a concave or convex arch of the bristles to fit the outside or inside arch of the teeth, so as to conform to the contour of the dental surfaces to be cleaned in a thorough and easy manner.

Another object of the invention resides in the particular provision, construction and relative disposition of the parts.

The nature of the invention and its distinguishing features and advantages will appear when the following specification is read in connection with the accompanying drawing, in which—

Figure 1 is a longitudinal sectional view of a brush, on an enlarged scale constructed in accordance with the present invention, portions being broken away.

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is a transverse sectional view of the flexing unit, the section being taken as indicated by the line 3—3 of Fig. 1.

Fig. 4 is a transverse sectional view of the flexing unit, the section being taken as indicated by the line 4—4 of Fig. 5.

Fig. 5 is a longitudinal sectional view of the flexible and resilient strips of the flexible unit of the handle.

Fig. 6 is a side elevation of the brush shown flexed to form the bristles in a convex arch.

Fig. 7 is a transverse sectional view of a modified form of flexing unit.

Fig. 8 is a transverse sectional view of a modified form of brush head.

Referring now more particularly to the several views of the drawing, it will be apparent, that the tooth brush of the present invention will include a flexing unit which extends throughout the handle 10 and head 11 of the brush. The flexing unit includes two thin strips 12 and 13 of flexible and resilient material such as spring steel, or other suitable material. The strips 12 and 13 are laid to-

gether and their opposite ends are welded or otherwise fastened together. Use may be made of two separate strips, or a single piece of material may be bent upon itself, to present a bight fastening a pair of the ends of the strips as indicated at 14, and the other pair of ends being welded as at 15, shown most clearly in Fig. 5. A relatively wide cleat or clip 16 of tubular formation, approximately one-third the length of the flexing unit, surrounds both strips 12 and 13 intermediate the ends thereof, and said cleat or clip is fastened to the strip 12 as indicated at 17 in Fig. 3, to keep the cleat or clip from creeping or crawling along the strips. The strip 13 is allowed to be loose enough in the cleat or clip 16 to easily slide lengthwise through it and still be held properly associated with the strip 12. From each end of the cleat or clip 16 to the end of the strips 12 and 13, said strips are held in close proximity to each other by narrow cleats or clips 18 arranged in spaced relationship. These narrow cleats 18 also are fastened securely as indicated at 19 to the strip 12. The flexing unit so constructed constitutes a body, frame or core which is inclosed by suitable pliable rubber, gum, celluloid compounds, or any other suitable material possessing sufficient flexibility and resiliency, to form an outer body to complete the construction of the handle 10 and head 11 of the brush. This outer or exterior part of the handle and head will therefore consist of materials which may be readily molded or vulcanized around the flexing unit, and may be of any desired shape or design which will be flexible. The bristles 20 may be incorporated in the head 11 in accordance with known methods of manufacture, as for instance by setting the bristles directly into the material constituting the head, or if this material is insufficiently hard and rigid, the bristles may be set in strips of hard material. The single row strip 21 of bristles may then be vulcanized or otherwise fastened to the head 11 so that the rows of bristles will be disposed at right angles to the head with sufficient space between the rows of bristles, to allow for the arching of the head.

From the foregoing it will be apparent

that when the handle 10 is held in one hand approximately at its middle, or coincidental with the cleat or clip 16, gripped by three or four fingers, and the extreme end of the handle is flexed with the little finger, or third and little finger to arch the same, the opposite end or head, will be reversely arched, as shown most clearly in Fig. 6. This is true because the strips 12 and 13 are only fastened together at their extremities, and all intermediate points are allowed to move or slide lengthwise against and independently of each other. From Fig. 3 it will be apparent that the strip 12 will be arched on a greater radius than the strip 13, due to the fact that the end of the handle remote from the bristle end is arched upwardly, consequently the head will be arched reversely, making a convex arch of the bristles. The bristles thus arched will fit the inside of the arch of the teeth, and therefore will conform to the contour of the dental surface inside of the mouth, and the bristles may therefore be moved over the teeth in the cleaning operation. When the end of the handle 10 is flexed in a reverse direction from that just mentioned the head will be reversely arched, and consequently the bristles will be made to assume a concave arch which will readily fit the outside arch of the teeth for the obvious purpose. In each case the displacement of the strips 12 and 13 is compensated for in a reverse arch of the head 11 and therefore of the bristles 20 to the arch of the end of the handle remote from the bristle end.

In some instances the flexing unit will be encased in a sheath, sleeve or tube 21 of suitable pliable material that will not adhere to the metal parts of the unit, and which will adhere to the material of which the outer or exterior part of the handle and head are made, thus leaving the flexing unit free to function in the manner hereinbefore explained. The same result obtained by the use of such sheath may be obtained by lubricating the flexing unit prior to the molding of the body around it, to prevent the molded material from adhering to the metal parts of the unit.

I claim:

1. A tooth brush having a flexible and resilient body consisting of a bristle portion and a handle portion; and in combination, flexible and resilient members slidably connected together intermediate their opposite ends and fixedly secured to each other at the ends and one of said members being fixedly secured to both of said body portions, whereby the head portion will be arched by arching said handle portion.

2. A tooth brush having a flexible and resilient body consisting of a bristle head portion and a handle portion; and in combination, a flexible and resilient unit extending relatively longitudinally through both of

said portions, whereby to arch said head portion by arching said handle portion, said unit consisting of flexible and resilient strips laid upon each other and fastened fixedly to each other at their opposite ends, and means embedded in said body embracing both of said strips and holding them in contact throughout their length.

3. A tooth brush having a flexible and resilient body consisting of a bristle head portion and a handle portion; and in combination a flexible and resilient unit extending relatively longitudinally through both of said portions, whereby to arch said head portion by arching said handle portion, said unit consisting of flexible and resilient metal strips laid upon each other and fastened to each other at their opposite ends, a rigid member embedded in said body surrounding said strips intermediate the ends thereof and secured only to one of said strips, and clips embedded in said body and arranged in spaced relation and embracing both of said strips beyond each end of said member and secured only to one of said strips.

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