

W. J. EGGERS.
RUBBER TOOTHBRUSH.
APPLICATION FILED AUG. 10, 1916.

1,327,757.

Patented Jan. 13, 1920.
2 SHEETS—SHEET 1.

Fig. 1.

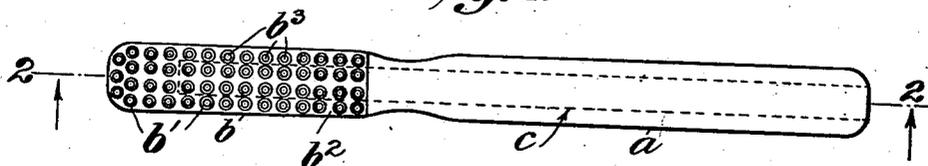


Fig. 2.

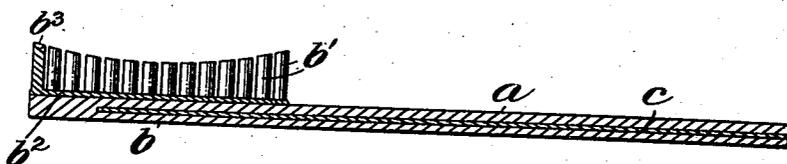


Fig. 3.

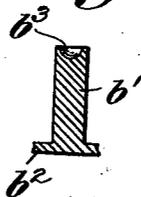


Fig. 4.

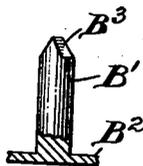
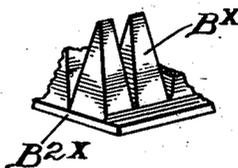


Fig. 5.



Attest:
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Fig. 6.

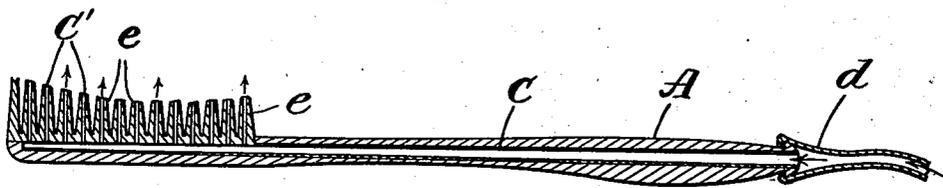


Fig. 7.

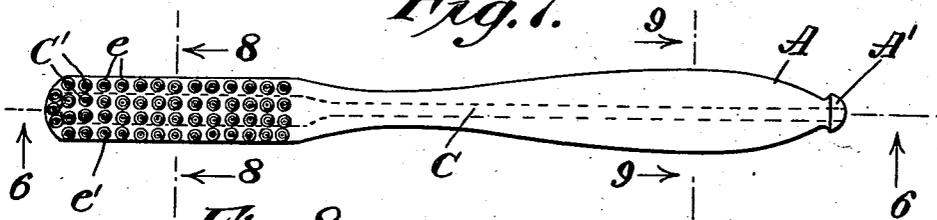


Fig. 8.



Fig. 9.

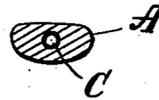
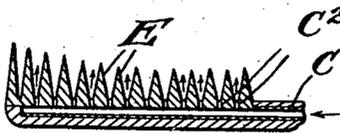


Fig. 10.



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UNITED STATES PATENT OFFICE.

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RUBBER TOOTHBRUSH.

1,327,757.

Specification of Letters Patent.

Patented Jan. 13, 1920.

Application filed August 10, 1916. Serial No. 114,102.

To all whom it may concern:

Be it known that I, WILLIAM J. EGGERS, a citizen of the United States, residing in the borough of Brooklyn, in the city of New York, in the State of New York, have invented certain new and useful Improvements in Rubber Toothbrushes, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

This invention relates to tooth brushes in which the bristles are made of rubber molded integral with or vulcanized to a reinforced flexible rubber handle. The invention is concerned with the improvement of brushes of this general character by the molding of the handle about the flexible metallic stiffening plate, independently of the molded bristles and then vulcanizing the brush portion proper with the handle section thereby reducing the cost of manufacture, insuring the formation of uniform bristles throughout, and providing for permanent integrality as between the handle and the brush portion, as is necessary. Still a further object of the invention is to provide a rubber brush in which the bristles may be of such character as to insure a more thorough cleansing of the teeth and gums than has been heretofore obtained by bristles of any other character, including rubber bristles as now known. In accordance with this object of the invention the bristles are molded with vacuum cups at their free ends in order to increase the intimacy of the engagement of the bristles with the teeth and the gums and effect what may be termed a plucking action which has been found most effective in removing foreign particles, bacteria, etc. and massaging the gums. In a modified form of the invention all of the general features pointed out briefly above are retained and, in addition, other desirable structural details are included. In this modified form the stiffening plate in the molded handle is formed as a hollow tube which may be connected at its outer end to a source of a suitable dentifrice and communicates at its inner end with ducts or channels molded either in the rubber bristles

or in the body of the brush adjacent the base of the bristles so that the dentifrice may be led to the desired point of application. It will appear in the detailed description hereinafter that the improved brush is of such character that the bristles may be of any form depending upon the shape of the mold. In the accompanying drawings—

Figure 1 shows a tooth brush of improved construction in which the bristles are molded with vacuum cups.

Fig. 2 is a view in section through the brush shown in Fig. 1 taken along the plane indicated by the line 2—2 of Fig. 1 and looking in the direction of the arrows.

Fig. 3 is an enlarged detail sectional view through one of the bristles in the brush shown in Figs. 1 and 2.

Figs. 4 and 5 are detail views showing other forms of bristles.

Fig. 6 is a view in longitudinal section and shows a tooth brush of somewhat modified form in which the stiffening plate is formed as a hollow tube to conduct dentifrice to the bristles, the section being taken along the plane indicated by the line 6—6 of Fig. 7.

Fig. 7 is a plan view of the brush shown in Fig. 6.

Fig. 8 is a view in transverse section taken through the brush shown in Fig. 7 along the plane indicated by the line 8—8.

Fig. 9 is a sectional view through the handle of the brush shown in Fig. 7 taken along the plane indicated by the line 9—9 and looking in the direction of the arrows.

Fig. 10 is a fragmentary sectional view of a brush constructed on the principle of the brush shown in Fig. 6 but with the liquid channels molded at the base of the bristles.

The improved brush is formed of two separate portions, to-wit, the handle portion *a* and the brush portion *b*, each of which is molded as an integral unit and then united with the other by vulcanizing in a manner well known. The handle *a* is formed of rubber molded about a longitudinally extended flexible metallic stiffening strip *c* which may be completely embedded in the rubber and afford the required degree of

stiffness thereto while permitting sufficient flexibility during use of the brush to effect the most advantageous cleansing and massaging action. The brush portion b is so molded as to comprise a series of bristles b' , each integral with a longitudinally extending rubber base b^2 whereby the brush portion itself when removed from the mold consists of a single unit. In molding the bristles b' , of course, each cell in the mold will be of such form as to give the desired shape and dimensions to each bristle. One of the important features of the present invention resides in the formation of a brush portion with bristles of such form as to insure a more perfect cleansing and massaging action thereof than has been heretofore obtained with bristles of any character and of any material. In Fig. 3, the shape of the improved bristle b' is shown, the dimensions of the bristles being such as to permit a vacuum cup or recess b^3 to be molded in its end. Each of the bristles of the brush portion b is molded in the same way with a vacuum cup b^3 and all of these bristles are so related to one another as to effect a continuous cleansing and massaging action when the brush is in use. It has been found that these cups b^3 tend to stick to the teeth and gums with the result that all foreign particles, bacteria, etc., are most thoroughly agitated and picked up by the engagement of the bristles and a sort of plucking action of the bristles on both the teeth and the gums is constantly maintained. The massaging action is of the best possible character for while the bristles are soft and yielding, there is sufficient grip between them and the gums by reason of the vacuum cups b^3 to increase greatly the massaging action which would be obtained were these cups not present.

After molding the brush portion b' integral with the rubber base b^2 , this base is vulcanized to the handle a , thereby forming a substantially permanent union between the two parts and providing a tooth brush which is practically integral throughout. In the formation of this integral brush of two separate units in the manner described, many material advantages as regards the cost of manufacture, facility, etc., accrue over rubber brushes heretofore proposed in which it was attempted to mold the entire brush in a single integral piece of rubber.

By the detail views of Figs. 4 and 5, it is sought to show that the improved brush shown in Figs. 1 and 2 may be molded of two separate pieces in the manner described and the bristles B' , B^* made integral with a suitable rubber base B^2 , B^{2*} in exactly the manner described, but with the bristles of different forms and dimensions from those shown in Fig. 3, without departing from the

spirit of the invention. The bristle B' shown in Fig. 4 is substantially cylindrical except for its pointed end B^3 which obviously may be most advantageous for use under some conditions. This point B^3 is such that it will pass readily between the teeth and engage the gums and thereby effect the desired cleansing and massaging action. As shown, each bristle B' is molded integral with the base piece B^2 and with the point B^3 . In Fig. 5 the bristles B^* , instead of being made cylindrical, are tapered throughout their length, converging to a single edge which may pass between the teeth and engage the gums in much the same way described with relation to the point B^3 in the bristle shown in Fig. 4.

The brush shown in Figs. 6-9 is constructed in the manner hereinbefore described and embodies all the features and advantages pointed out. This brush, in addition, is provided with certain structural details which may be useful under some conditions and will commend itself particularly to dentists. The rubber handle A of the brush is molded about a tubular piece C which terminates at the outer end of the handle and may have placed in communication therewith a flexible tube d communicating with any available source of dentifrice or ozone, etc. For convenience in attaching this tube, the end of the handle A may be molded with a circular boss A' to receive the lip of the tube. The inner end of the tube C communicates with a series of ducts or channels C' molded directly in the rubber bristles e , the ends of which may be provided with cups e' as described in connection with the foregoing embodiments. In use, the brush has the tube d attached to it and is passed over the teeth and gums with the massaging effect hereinbefore described, the dentifrice or ozone or the like being discharged at the same time over the gums and teeth through the passages C' .

In the embodiment shown in Fig. 10, the tube C communicates with channels or ducts C^2 molded in the body of the brush at the base of the bristles E which are formed solid throughout and are of any desired shape and dimensions. In using the brush shown in Fig. 10, the dentifrice or the like passes through the channels C^2 and is led therefrom along the bristles E to the mouth or to the portion of the teeth or gums with which the brush is in contact.

The advantages of the improved brush have been pointed out fully herein and in considering these advantages it is necessary to take into account the peculiar manner in which the integral brush is formed as a new article of manufacture, and also the advantages in use which have been provided

through the molding of the bristles in the forms described, particularly that form shown in Figs. 1 and 2.

I claim as my invention:

- 5 A rubber tooth brush comprising an integral rubber handle, a unitary brush portion formed of bristles of rubber molded integral with a base vulcanized to the handle, part

of said bristles being provided with channels extending through the base, a hollow metallic stiffening piece embedded in the handle extending beneath the base and communicating with the channels therein. 10

This specification signed this 8th day of August, 1919.

WILLIAM J. EGGERS.