

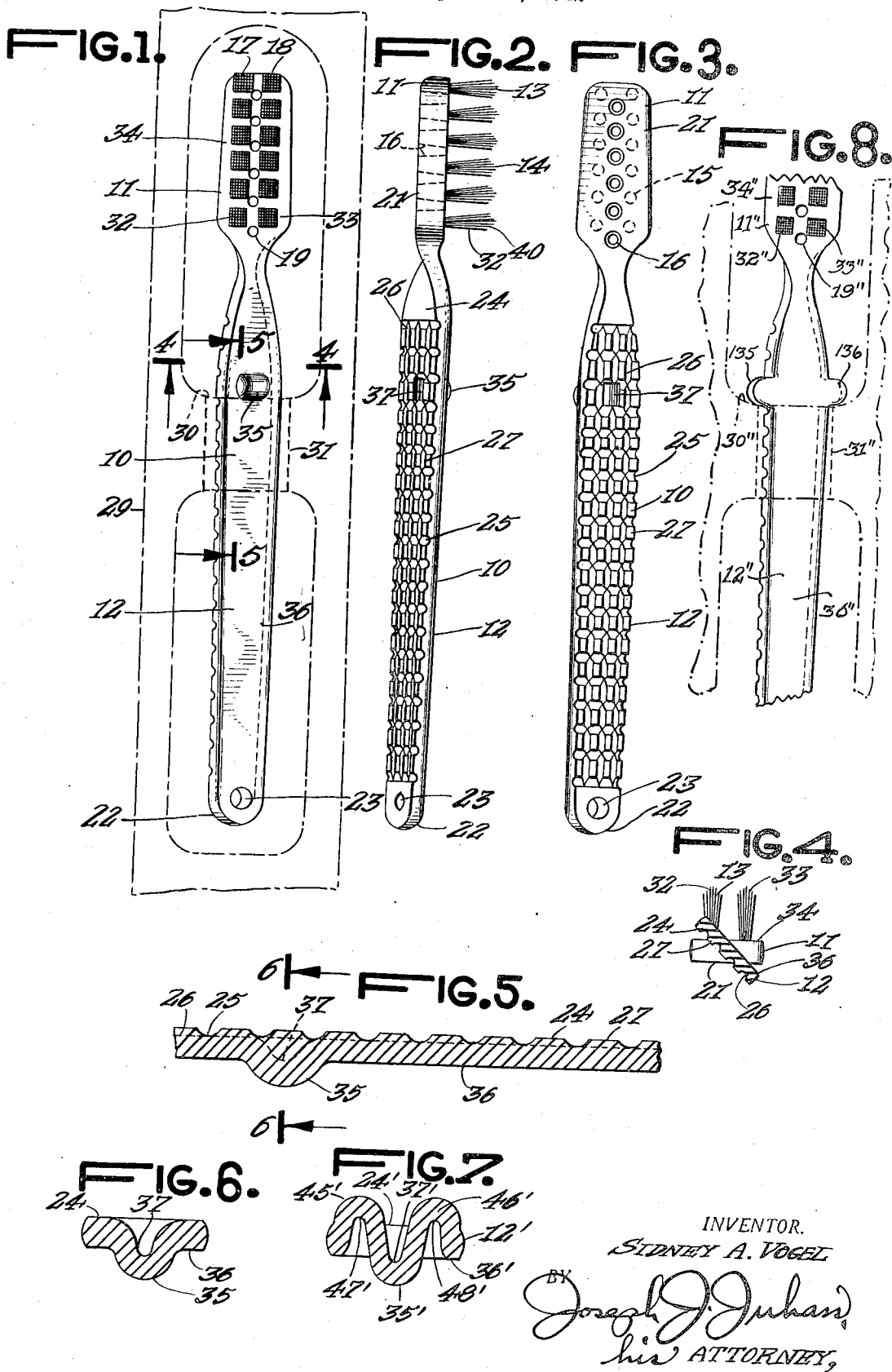
Oct. 17, 1944.

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2,360,745

TOOTHBRUSH

Filed April 10, 1942



UNITED STATES PATENT OFFICE

2,360,745

TOOTHBRUSH

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Application April 10, 1942, Serial No. 438,393

1 Claim. (Cl. 15-167)

This invention relates generally to devices for the cleaning of teeth and more particularly to tooth brushes.

Among the objects of the present invention lies the provision of novel tooth brush structure particularly suited for the proper cleaning of the teeth by persons who are left handed.

It has been recognized that a tooth brush in which the principal plane of the handle is the same as the principal plane of the bristle carrying head is not conducive to the proper positioning of the bristles with relation to the teeth, nor to the proper movement of the bristles in correct tooth cleaning movement, and for this purpose the plane of the handle has been angularly rotated with relation to the plane of the bristle carrying head. Such altered constructions, however, have been particularly adapted for the use of right handed people. It has been estimated that some 6% to 7% of the population is naturally left handed or possess the greatest dexterity in the left hand. This means that some five to seven million people do not have available properly constructed brushes for the thorough cleaning of their teeth.

In accordance with the present invention the plane of the handle of the brush is rotated about a longitudinal axis penetrating both the handle and the bristle carrying head. The handle is rotated so as to be permanently angularly disposed with relation to the plane of the bristle carrying head. By such construction the use of the brush by a left handed person in an improper manner becomes difficult and uncomfortable thereby permitting the proper use of the brush in a proper recognized tooth cleaning movement.

In order to increase the cleansing action of the brush it is customary to use the same with some dentifrice either in paste, powder or liquid form in conjunction with water to increase the laving action. After the brush has been used it is customary to rinse the same and to put the brush away at some place where the water may evaporate therefrom. Since moisture is normally conducive to the growth of germs or other undesirable microorganisms it is desirable that the brush be dried as quickly as possible. To this end I have provided certain novel structure for increasing the rate at which the brush is dried.

It is therefore another object of the present invention to provide a brush structure having means for increasing the rate at which the brush may be dried after use. A flow of air through and adjacent to the bristles of the brush not only

permits the drying of the brush but also the air flow is known to have a germ growth retarding effect.

It is therefore a still further object of the present invention to provide a brush head construction which permits the flow of air through the bristles longitudinally thereof. The wet brush after use is usually either placed in a suitable holder which supports the brush in a vertical position or the brush is placed in a glass or similar vessel, or the brush is laid down on a flat surface. By reason of the novel handle construction disclosed herein the flow of air to hasten the drying of the handle and adjacent parts is facilitated by the peculiar shape and configuration of the handle. This feature will be described hereinafter.

Another object of the present invention lies in the provision of a tooth brush having the above described characteristics, yet which may be manufactured in large quantities at relatively low cost so that the same may have a consequential wide sale, distribution and use. In accordance with the present construction, apart from the necessity of different dies for forming the various parts, the novel tooth brushes may be made at substantially no increase in cost over those heretofore made and not having the advantages of the new construction.

These objects and other incidental ends and advantages will more fully appear in the progress of this disclosure and be pointed out in the appended claims.

In the drawing in which similar reference characters designate corresponding parts in each embodiment:

Figure 1 is a front elevational view of a first embodiment of the invention. In this view the tooth brush is shown as supported in a tooth brush holder of a conventional type, said holding being indicated in dot-dash lines.

Figure 2 is a side elevational view of the tooth brush shown in Figure 1 as might be seen from the left side of said figure.

Figure 3 is a rear elevational view of the brush shown in Figure 2 as might be seen from the left side of Figure 2.

Figure 4 is a transverse horizontal sectional view as seen from plane 4-4 on Figure 1.

Figure 5 is an enlarged fragmentary vertical sectional view as seen from the plane 5-5 on Figure 1.

Figure 6 is a transverse sectional view of the device as might be seen from a plane corresponding to the plane 6-6 on Figure 5.

Figure 7 is a sectional view corresponding to Figure 6 but shows an alternate form of the invention.

Figure 8 is a fragmentary front elevational view of a third embodiment of the invention.

Turning now to the first form of the invention shown in Figures 1 to 6 inclusive the device generally indicated by numeral 10 in the form of a tooth brush comprises broadly a bristle carrying head 11 and a handle 12. The bristle carrying head 11 and the handle 12 are preferably composed of a unitary piece of suitable material preferably of a thermoplastic or thermo-setting nature. For this purpose any of the materials suited thereto and well known in the art to which the present invention relates may be used. Examples of such materials are cellulose acetate, cellulose nitrate, various artificial resins or methyl methacrylate.

The head 11 may be of the usual construction with regard to the securing therein of the tufts 13 of the bristles 14. For example, one method of fastening bristles in place involves the insertion of a central fold of a bunch of bristles (each bristle being U-shaped and having two outer working ends) into previously formed sockets 15 and wedging the same in place by a thin wedge disposed between the tufts 13 and a plurality of ventilating orifices 16. These ventilating orifices 16 completely penetrate the head 11. The embodiment of the invention illustrated in Figures 1 to 4 inclusive has the bristles 14 arranged in two vertical rows 17 and 18. This two row arrangement is merely by way of example and it will be readily understood by those skilled in the art to which the present invention relates that where desired the number of vertical rows may be increased, in which event instead of having a single vertical row 19 of ventilating orifices 16, additional rows corresponding to the row 19 may be placed between adjacent rows of bristles. The ventilating orifices 16 are spaced vertically along the head 11 in the row 19 in such a manner that they lie between the horizontal rows of the tufts 13. This positioning of the ventilating orifices is best produced by locating the orifices 16 at the intersection of imaginary diagonals which interconnect the sockets 15. This arrangement of the orifices 19 permits them to be of sufficient diameter to permit the ready passage of air there-through, yet leaves the greatest amount of material of which the head 11 is composed adjacent the sockets 15 for mechanical support.

As seen in Figure 2 the orifices 16 preferably taper uniformly outwardly toward the rear surface 21 of the head 11. This shaping of the orifices 16 also permits a greater effective orifice diameter without reducing the effective tensile strength of the head 11 since the sockets 15 increase in diameter toward the rear surface 21 which is not pocked by sockets corresponding to the sockets 15.

The handle 12 is preferably of substantially elongated flat shape having a rounded terminal 22 having a hanger orifice in the usual manner. The rear surface 24 of the handle 12 is provided with a series of spaced and parallel horizontally transverse grooves 25 which are intersected by a series of spaced and parallel vertically and longitudinally arranged grooves 26, thereby forming a plurality of uniformly distributed handle supporting projections 27. This configuration of the rear surface 24 of the handle 12 may be of course formed in a single operation at the time the handle and head are molded when this meth-

od of fabrication is utilized. The handle supporting projections 27 support the handle portion 12 of the brush 10 when the latter is placed upon a flat surface such as a vitreous bathroom shelf and when they do support the brush handle the grooves 25 and 26 act as ventilating passages permitting currents of air to flow there-through and to carry away the moisture which accumulates on the handle when the brush is used. These air passages thus increase the rate of evaporation so that the brush handle is dried more rapidly with a consequent reduction in growth of undesirable microorganisms.

Furthermore, the projections 27 also aid in giving the user a non-slip grip of the handle when the brush is used. This feature of increasing the security of the hold which the user has upon the handle is advantageous because it is desirable that any surface irregularities on the handle be of relatively low order so that they do not serve as minute pockets for the collection of mucin and other material which would harbor germ growth. Thus, in accordance with the present construction the surface of the handle may be relatively highly polished yet the projections 27 give the user a sure grip of the handle.

There are at the present time a large number of tooth brush holders in use (indicated schematically by dot-dash lines on Figure 1) which have a horizontally disposed surface such as 30 (Figure 1), having a vertically directed orifice 31 through which the handle 12 of the brush 10 is inserted for the purpose of storing the brush between usings. Ordinarily these holders are of such size and construction that the brush within the holder is prevented from downward movement completely there-through by reason of the lowermost tufts 32 and 33 contacting the upper surface 30. Since these bristles are moist after using, they not only carry their own moisture but they also serve to collect the moisture from the bristles thereabove, and these tufts 32 and 33 thereby remain moist for an inordinately long time serving not only as harbors for germ growth but the moisture being in contact with these bristles over a long period of time causes a disintegration of the bristle structure with a resulting loss in resiliency and cleaning ability.

In accordance with the present invention an enlargement or projection 35 is provided on the front surface 36 of the handle 12. This enlargement 35 is disposed a sufficient distance away from the head 12 so that the enlargement 35 does not irritate the lips of the user and therefore need not enter the oral cavity. The enlargement 35 in contacting the surface 30 maintains the brush head 11 in an elevated position so that the moisture on the bristles may drain from all of the tufts and not collect on the lowermost tufts 32 and 33. It is understood, of course, that the enlargement 35 increases a transverse effective diameter of the handle 12 to such an extent that it is greater than the effective diameter of the orifice 31.

As seen in Figure 5 the projection 35 preferably may be formed either as an extension on the surface 36 or may be formed by deforming the handle 12 by means of a corresponding cavity 37 in the rear surface 24.

The projection 35 also assists in retaining the device 10 in a position so that the lower terminal 22 is also out of contact with a lower surface (not shown) in the lower portion of the holder 29 so that air circulation at this point, too, is permitted, and excess moisture may draw in com-

pletely off the brush to form a small puddle out of contact with the device 10.

As best seen in Figure 4 the device 10 as viewed from the bottom thereof is so constructed that the handle 12 is rotated through approximately 45 degrees in a clockwise direction with relation to the plane of the bristle carrying front surface 34 of the head 11. By reason of this angular disposition of the handle 12 with relation to the head 11 the brush may be manipulated with the hand in a most convenient and comfortable position by left handed users. This arrangement of the parts permits a proper positioning of the fingers of the hand of the left handed user so that although the head and handle are in a unitary longitudinal axis, the plane of the bristle terminals 40 may be conveniently and easily positioned parallel to the principal tooth surfaces which are to be cleaned and a massaging action of the gums is easily obtained.

Turning now to the embodiment of the invention shown in Figure 7, for the purpose of avoiding needless repetition parts corresponding to those of the first embodiment are given the same reference characters with a singly primed suffix.

The second embodiment differs from the first embodiment principally in the handle construction which has a protuberance 35' on the front surface 36' thereof and also has a pair of protuberances 45' and 46' on the rear surface 24' of the handle.

In connection with both the first and second embodiments the protuberances 45' and 46' may be formed by corresponding concavities or depressions 47' and 48' so that deformation of the material of which the handle is composed may produce the protuberances with relatively slight increase in the amount of material.

The operation of the second embodiment is substantially the same as that of the first with the exception that by reason of the fact that the projections are located on the front and rear surfaces of the handle a greater effective transverse

diameter is obtained at that point where the projections are located.

Turning now to the embodiment in the invention shown in Figure 8, for the purpose of avoiding needless repetition parts corresponding to those of the first embodiment are given the same reference characters with a doubly primed suffix.

The third embodiment differs from the first embodiment principally in the handle construction which has a pair of protuberances 135 and 136 on the lateral surfaces of the handle 12''. These protuberances may be formed by appropriately blanking the stock from which the handle is fabricated or by reducing the thickness of the handle at the point where the projections 135 and 136 are located causing the material of which the handle is made to be laterally extruded to form the projections 135 and 136.

The operation of the third embodiment is substantially the same as that of the first with the exception that by reason of the fact that the projections are located on the two side surfaces of the handle a greater effective transverse diameter is obtained at that point where the projections are located.

It may thus be seen that I have disclosed a novel tooth brush construction presenting advantages over those heretofore known which not only permits proper use of the brush but also permits the user, without any extra effort, to maintain his brush in a more hygienic condition.

I claim:

A tooth brush for support upon a surface comprising: a head, a handle; and a plurality of tufts of bristles secured in said head; said handle being substantially rectangular in cross sectional outline to thereby present relatively narrow lateral surfaces, spaced opposed handle supporting projections extending from the lateral surfaces thereof; said projections acting to support the said tooth brush in spaced relation to the surface upon which it may be placed.

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