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C. JOBST

2,122,318

METHOD OF MAKING BRUSHES

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FIG.1.

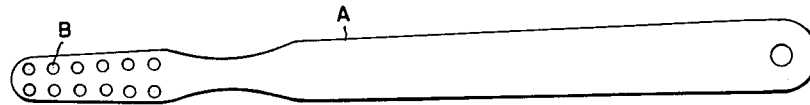


FIG.2.

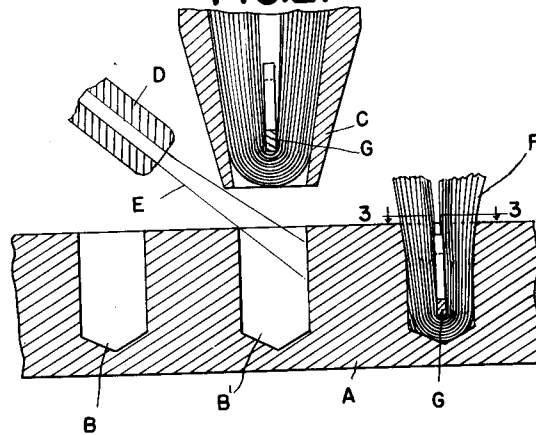
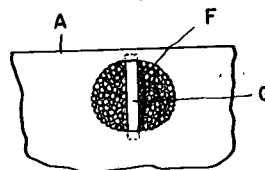


FIG.3.



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METHOD OF MAKING BRUSHES

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3 Claims. (Cl. 300—21)

The invention relates to brushes of that type in which the tufts are set in a brush back or handle formed of a plastic composition. For instance, the handles of toothbrushes are usually formed of material which is molded or fashioned when in a more or less plastic state. However, when the operations of drilling and tufting are performed this material is in rigid condition and as a consequence the bristles of the tufts are frequently injured during the tuft-setting operation. To avoid this difficulty, I have devised a method for locally softening the material surrounding each tuft socket so that it may be slightly displaced by the tuft during setting. This will prevent injury to the bristles which come in direct contact with the material and will also slightly enlarge the diameter of the socket in a direction corresponding to the largest diameter of the tuft. Thus, a brush formed by this method will have a greater length of life and will otherwise be superior to brushes formed by the methods heretofore used. The invention, therefore, consists in the product and the method of forming the same as hereinafter set forth.

In the drawing:

Figure 1 is a plan view of a toothbrush handle having sockets bored therein for the reception of the tufts;

Figure 2 is an enlarged longitudinal section through a portion of the handle illustrating the means for softening the walls of the socket and embedding the bristles of the tufts therein;

Figure 3 is a cross section on line 3—3 of Figure 2.

My improved method can be carried out in any suitable type of brush tufting machine, such as heretofore used and in which the drilled brush back or handle is moved step by step to successively register the bores or sockets with the tuft setting nozzle. Immediately preceding the setting of each tuft the bore or socket for receiving the same is internally heated so as to render the walls slightly plastic. This is preferably accomplished by a fine jet of highly heated fluid, such as air, which is blown into the socket immediately preceding the driving of the tuft therein. The nozzle for delivering this jet is positioned adjacent to the socket but so as to clear the tuft delivering nozzle.

As shown, A is the brush back or handle having a series of bores or sockets B formed therein. C is the nozzle through which the tuft is discharged and which as shown is in registration with one of the sockets B'. D is another nozzle for delivering a very fine jet of heated air E and this nozzle is preferably arranged in an oblique position so that the jet will be directed into the

socket while the nozzle D will clear the path of the nozzle C. Thus the air which is delivered from the nozzle D during the interval of registration of the socket B' with the nozzle C will convey sufficient heat to the walls of the socket to render the same plastic. Consequently, when the tuft is pressed downward into the socket the bristles F on opposite sides of the anchor G will be pressed and embedded in the plastic wall, slightly enlarging the diameter thereof and avoiding any abrasive action. It will also be noted in Figure 3, that the portion of the wall contacting with the outer row of bristles will be fashioned into a complementary contour enlarging the area of contact and avoiding any highly localized pressure on the bristles.

Various materials may be used for forming the brush backs, such for instance as that which is commercially known as "vinolyte". Such material when heated to a temperature of 350° F. becomes plastic and if the air delivered by the jet is of sufficiently high temperature, such as 600° F., it produces the necessary softening during the brief interval of registration.

While I have described only the one specific method of softening, it is obvious that my invention includes any other suitable means within the scope of the claims of locally softening the wall of the socket, while leaving the surrounding material in its rigid condition. It is also obvious that various other materials than the specific material "vinolyte" may be used for the brush backs and operated upon in a similar manner.

It is one of the characteristics of the material "vinolyte" that when bent or deformed in a cold state, it is whitened, but that when softened by heat, this whitening does not occur. Furthermore, a jet of air or gas at relatively high temperature will very quickly soften the surface of this material against which it impinges, so that the setting of the tufts may be accomplished at a high rate of speed.

What I claim as my invention is:

1. In the method of tufting brush backs, the step of locally heating the wall of a tuft socket to soften the same prior to the setting of the tuft therein.

2. In the method of tufting brush backs, the step of injecting a heated fluid into a tuft socket to locally heat and soften the wall thereof prior to the setting of the tuft therein.

3. In the method of tufting brush backs, the step of injecting a heated gas into a tuft socket to locally heat and soften the wall thereof prior to the setting of the tuft therein.

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