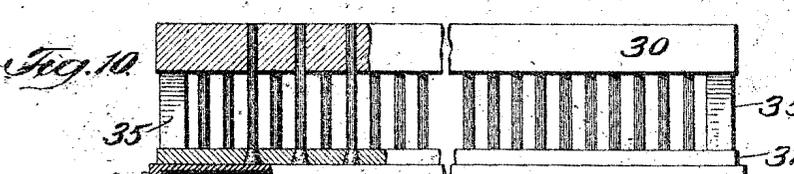
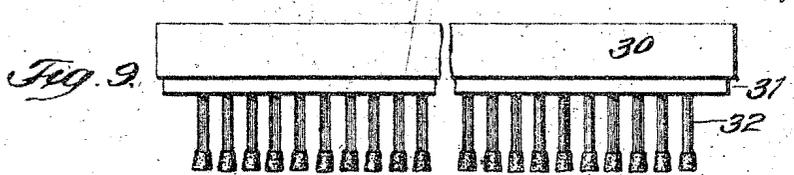
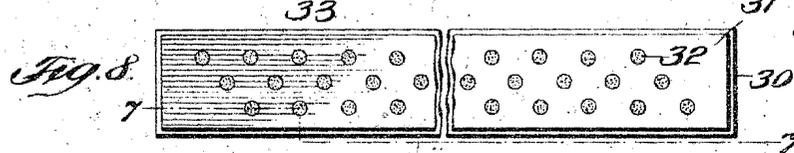
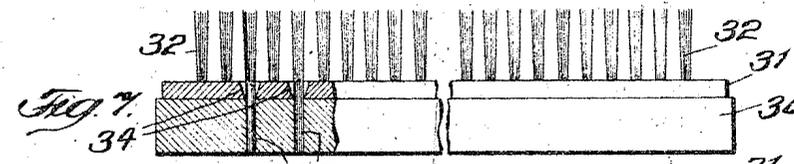
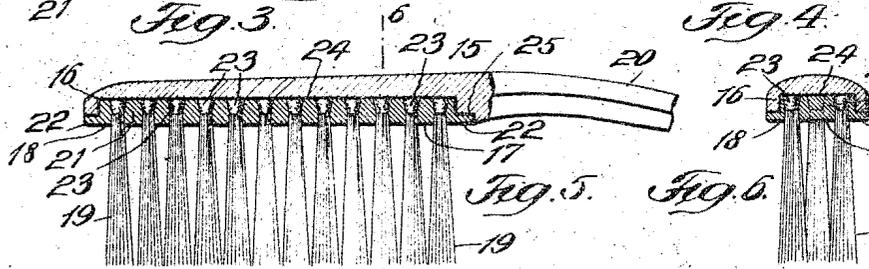
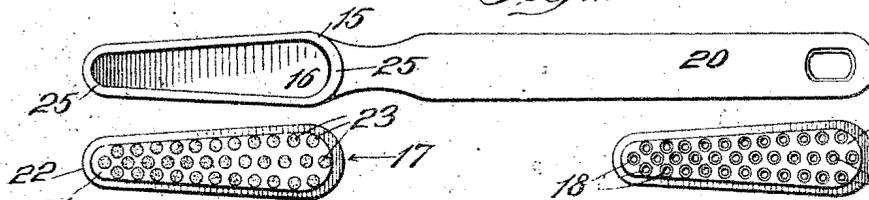
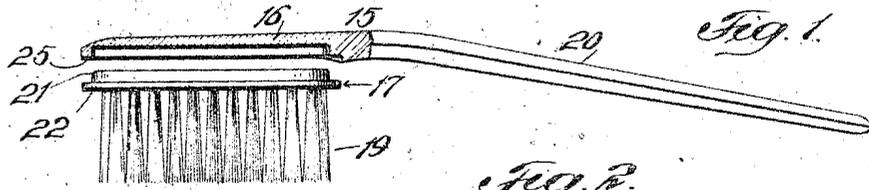


T. F. BARRY.
BRUSH.
APPLICATION FILED FEB. 17, 1914.

1,148,566.

Patented Aug. 3, 1915.



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BRUSH.

1,148,566.

Specification of Letters Patent.

Patented Aug. 3, 1915.

Application filed February 17, 1914. Serial No. 519,166.

To all whom it may concern:

Be it known that I, THOMAS F. BARRY, a citizen of the United States, and a resident of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Brushes, of which the following is a specification.

The invention relates to improvements in brushes, and the object of the invention is to produce a brush of superior character both in the matter of general durability and of so securing the bristles that they are not likely to shed.

The brush of my invention comprises preferably a back of any suitable or desirable outline recessed on its underside and preferably made of celluloid or other pyroxylin material, and a plate of corresponding material and of somewhat greater thickness in its main portion than the depth of the recess in said back and adapted at said main portion to closely enter said recess, said plate having along its lower side edges a surrounding rim to engage the lower outer edges of the back and being not only of sufficient thickness to fill the recess in the back, but of requisite thickness to have special holes formed therein to receive the upper or knot ends of the individual tufts of bristles and heads of vulcanized rubber on said ends, said heads holding the bristles of the tufts together and the tufts within the holes in said plate. Each tuft is, prior to its introduction to the aforesaid plate, entirely completed with its knot end carrying a head of vulcanized rubber to hold the bristles together, and after all of the tufts have been applied to the plate, a very thin layer of celluloid cement or a very thin veneer of celluloid is applied upon the upper surface of said plate and the upper ends of the heads of vulcanized hard rubber on the tufts, and in this way the plate and all of the tufts become fastened together and the head comprising the plate and tufts may then be readily handled and applied to the recess within the back of the brush.

I present my invention herein as embodied in a tooth brush having an integral back and handle made of celluloid and a tuft or bristle carrying plate made of like material. I do not however desire to limit my invention to its embodiment in tooth brushes, since I am aware that brushes for varying purposes may be made in accordance therewith.

The invention will be fully understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which:

Figure 1 is a side elevation, part in section, of the back and tuft-carrying plate slightly separated from each other and ready for application one to the other in completing the brush; Fig. 2 is a detached bottom view of the back and handle of the brush; Fig. 3 is a top view of the tuft-carrying plate or brush head, with the tufts held thereby; Fig. 4 is a corresponding view of the same with the tufts omitted from the perforations or holes in said plate; Fig. 5 is an enlarged central longitudinal section through the brush back and tuft-carrying plate with the tufts therein, the whole being assembled and secured together by celluloid cement applied at the meeting surfaces of said back and plate, the handle of the brush being partly broken away; Fig. 6 is a transverse section of the same on the dotted line 6-6 of Fig. 5; Figs. 7 to 10 inclusive illustrate suitable means for forming the tufts and vulcanizing rubber on the ends thereof for securing the bristles of each tuft together, Fig. 7 being a side elevation, partly broken away and partly in section, of a base block, mold-plate thereon and bristles in said block and plate, this figure representing one step of the process of manufacturing the tufts; Fig. 8 a top view of the same and indicating by the dotted line 7-7 the section on which Fig. 7 is taken; Fig. 9 is a side elevation, partly broken away, showing the base block, mold plate and bristles after the whole structure has been inverted from the position shown in Fig. 7 and the then lower extremities of the tufts have been dipped into a rubber solution, and Fig. 10 a side elevation, partly broken away and partly in section, showing the base-block and mold-plate spaced apart and said plate with the rubber on the ends of the tufts of bristles inclosed therein, placed on a vulcanizing table, and Fig. 11 is a detached perspective view on an enlarged scale of one of the completed tufts.

In the drawings, referring to Figs. 1 to 6 inclusive, and Fig. 11, 15 denotes the back of the brush having a recess 16 therein, 17 the plate adapted to said recess and formed with a series of vertical holes or perforations 18 therein, and 19 the tufts whose up-

per ends are held within said holes or perforations 18. Preferably the back 15 will be formed with a suitable handle 20, and said back and handle will preferably be
 5 molded in one integral piece of celluloid or other pyroxylin material. The plate 17 will also preferably be in one integral piece of celluloid or other pyroxylin material, and the holes 18 in said plate 17 are conical
 10 at their upper ends and at their lower portions have parallel walls, as more clearly represented in Figs. 5 and 6. The plate 17 has a comparatively thick body portion 21 adapted to the recess 16 in the back, and this body
 15 portion is surrounded by a laterally projecting flange 22 which engages the face surfaces 25 of the back 15 surrounding the recess 16 therein.

The tufts 19 are each independently
 20 formed to completion and then applied to the plate 17. The tufts 19 are of special character in that they are independently formed and that the bristles thereof are held together at the knot end of the tuft by the
 25 head 23 of vulcanized hard rubber, said head 23 preferably being conical in outline or having downwardly converging side walls and a flat upper end. The heads 23 conform to the outline of the upper portions of the
 30 holes or perforations 18 in the plate 17 and snugly fit within the same, the upper flat ends of the heads 23 being on a level with the upper flat face of said plate. One purpose of providing the plate 17 with the thick
 35 body portion 21 is to make provision for the holes or perforations 18 of the character shown adapted to receive the upper ends of the tufts of bristles with the vulcanized
 40 heads 23 thereon, said heads fitting the upper enlarged portions of said holes or perforations and the tufts just below said heads closely fitting within the lower contracted ends of said holes or perforations.

In the manufacture of the brush I first
 45 make the individual tufts and then insert said tufts downwardly through the holes or perforations 18 in the plate 17, pressing said tufts through said holes or perforations until the upper ends of the heads 23 are on a
 50 level with the upper surface of said plate 17, and thereupon I apply a very thin layer of celluloid cement or secure a very thin veneer of celluloid over the top of the body portion 21 of the plate 17 and over the upper
 55 ends of the heads 23, as I indicate at 24. This thin layer of cement or thin veneer of celluloid serving to hold the tufts in the plate 17 and also to bind the tufts in said plate to a sufficient extent to permit the
 60 plate to be readily handled in making up the brushes without the tufts becoming irregular or slipping therefrom.

I regard the employment of the thin layer of celluloid cement or of celluloid 24 of con-

siderable importance, because it does aid in
 65 holding the tufts and preventing them from slipping from the plate 17 during the process of manufacturing the brushes, and leaves the upper face of the body portion 21 smooth
 70 and uniform and adapted to smoothly and uniformly engage the corresponding surface of the recess 16 in the back 15. The manner of assembling the plates 17 carrying the
 75 tufts and the back 15 consists merely in applying celluloid cement either upon the upper surfaces of the plate 17 and along the vertical sides of the body portion 21 thereof, or in applying celluloid cement to the sur-
 80 faces of the recess 16 in the back and the surrounding surface 25 of said back, and then inserting the body portion of the plate 17 within the recess 16 and pressing the
 85 flange portion 22 of said plate against the surface 25 of the back. The celluloid cement will firmly unite the plate 17 and back 15 and said plate and back will, due to the nature of the material and the cement employed, become in effect one integral piece. The body portion 21 of the plate 17 completely fills the recess 16 in the back 15, as
 90 shown in Fig. 5, and the brush, when completed, is of very durable character with the bristles firmly secured in position.

I will now describe the means for making the tufts 19. Referring to Figs. 7 to 10
 95 inclusive, 30 designates a base-block, 31 a mold plate thereon, and 32 bunches of bristles threaded through the registering openings or apertures 33 in said base-block, and 34 in
 100 said mold plate, the apertures 34 being conical in outline. In carrying out the process of manufacture I place the mold-plate 31 upon the block 30 with the respective openings or apertures in said plate and block in
 105 register, and then thread or sift the bristles for the tufts through said openings, as shown in Fig. 7. The securing of the bunches of bristles within the openings 33 in the block 30 and extending the bristles considerably above the plate 31 results in the
 110 upper ends of the bunches of bristles being somewhat spread or of greater diameter than the diameter of those portions of the bunches within the block 30. After the bristles for the series of tufts have been located in the block 30 and plate 31, said
 115 block and plate are inverted or turned upside down, as shown in Fig. 9, and the then lower ends of the bunches of bristles are dipped into a rubber solution which will enter in between the bristles of the tufts and thoroughly coat the same and form
 120 heads of rubber thereon, as represented at the lower portion of Fig. 9. I then allow the rubber at the ends of the bunches of bristles or tufts, as they may now be called, to partly cure or oxidize by exposure to the air for a limited period, preferably allow-

ing the block, plate and bristles to stand over night preparatory to the vulcanizing of the rubber on the ends of the tufts. The next step in the process is to slide the mold plate 31 outwardly on the tufts until the outer ends of the tufts carrying the rubber are within the openings 34 in said plate, and thereupon I insert spacing or distance pieces between the block and plate so as to hold them properly apart and maintain the bunches or tufts of bristles in proper condition and relation to each other and to said block and plate. Thereafter the structure is placed upon a steam or other heated table 36, as shown in Fig. 10, the plate 31 being directly on the table and the then lower ends of the heads of rubber on the tufts being in contact with said table. The heat of the table 36 will be imparted to the plate 31, which is preferably of metal, and at first the heads of rubber on the ends of the tufts will become softened and conformed to the shape of the holes 34 in the plate 31, and thereafter the continued action of the heat will result in the rubber of the heads becoming vulcanized and in said heads taking the form of the holes 34 in the plate 31 and firmly binding the bristles of each tuft together. After the rubber on the ends of the tufts has become properly vulcanized, the block 30 may be stripped from the tufts leaving them all held by the plate 31, and the tufts may then be removed from the plate 31, and used in the manufacture of the brushes, the tufts then being complete and ready for independent insertion in the holes or perforations 18 of the plate 17. The conical holes 34 in the plate 31 serve as molds for shaping the heads 23 on the tufts, and should be of a size corresponding with the dimensions of the upper ends of the openings or perforations 18 in the plate 17, so that when the tufts are applied to said plate 17 the heads 23 thereon will snugly fit into the said holes or openings 18. The block 30 and mold plate 31 may be of considerable size, if desired, so that several hundred tufts may be formed with the use thereof at a single operation.

I have hereinbefore disclosed the preferred embodiment of my invention, especially with regard to tooth brushes, and also the preferred method of preparing the individual tufts for either tooth or other brushes. I prefer, for tooth and some other brushes, to form both the back and tuft carrying plate of plastic material, since when said two parts thus formed are united they become substantially one integral whole and a very desirable brush, for many reasons, results. I do not wish, however, to limit my invention, as claimed, to the specific de-

tails hereinbefore described further than the invention and claims may require.

What I claim as my invention and desire to secure by Letters Patent, is:

1. A brush comprising a back and a handle integral therewith of pyroxylin material, said back having on its lower side a recess conforming generally to the outline of the back, a plate of pyroxylin material having a body portion substantially filling said recess and a lower lateral flange united to the lower surface of said back surrounding the said recess, and said plate also having a series of vertical holes enlarged at their upper ends, and a series of tufts of bristles in the holes in said plate, said tufts each having independently thereon a head of heat vulcanized rubber holding the bristles of the tuft together and confined within a hole in said plate, and said plate having on its upper surface a thin layer of pyroxylin material binding said heads in the holes in said plate.

2. A brush comprising a back and a handle integral therewith of plastic material, said back having in its lower side a recess conforming generally to the outline of the back, a plate of plastic material having a body portion substantially filling said recess and secured therein, and said plate also having a series of vertical holes enlarged at their upper ends, and a series of tufts of bristles in the holes in said plate, said tufts each having independently thereon a head of vulcanized rubber holding the bristles of the tuft together and confined within the hole in said plate, and said plate having on its upper surface a thin layer of material binding the tufts in the holes in said plate.

3. A brush comprising a back having in its lower side a recess conforming generally to the outline of the back, a plate having a body portion substantially filling said recess and secured therein, and said plate also having a series of vertical holes enlarged at their upper ends, and a series of tufts of bristles in the holes in said plate, said tufts each having independently thereon a head of cementitious material holding the bristles of the tuft together and confined within a hole in said plate, and said plate having on its upper surface a thin coating of cementitious material binding the tufts in the holes in said plate.

Signed at Newark, in the county of Essex, and State of New Jersey, this 16th day of February, A. D. 1914.

THOMAS F. BARRY.

Witnesses:

A. MILLS CARSWELL,
ARTHUR MARION.

RUBBERSET

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