R. T. R. HASTINGS.

BRUSH AND METHOD OF MAKING THE SAME.

APPLICATION FILED JULY 12, 1920.

1,375,755. **Patented Apr. 26, 1921.**

Fig. 1.

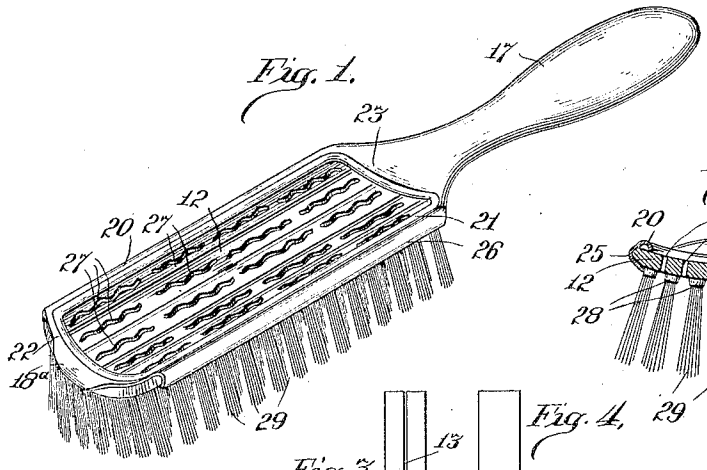


Fig. 2.

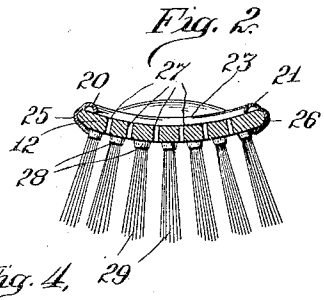


Fig. 3.

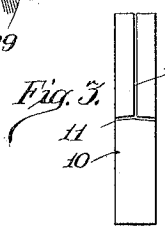


Fig. 4.

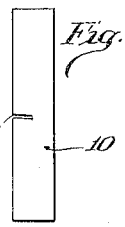


Fig. 5.

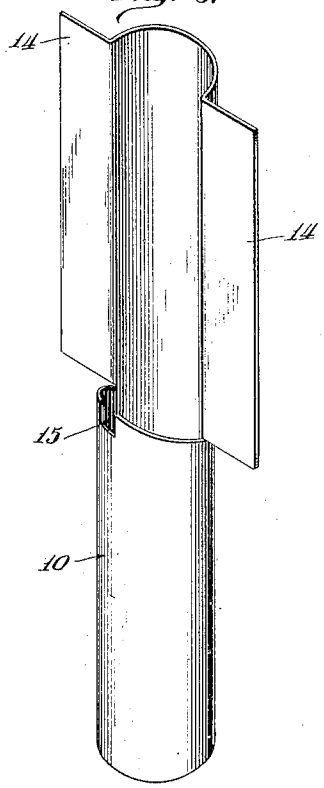


Fig. 6.

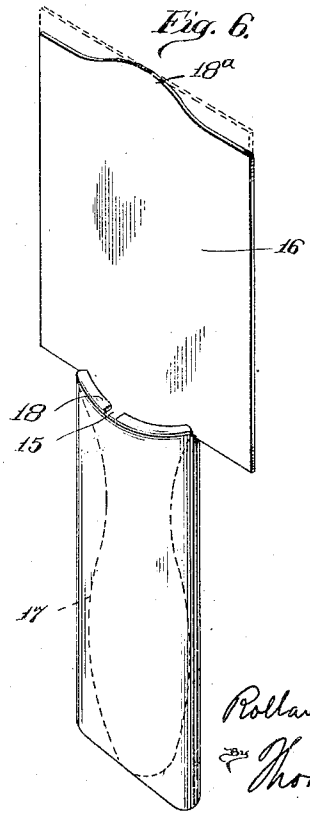
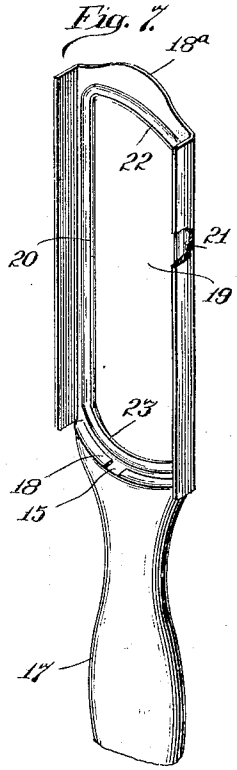


Fig. 7.



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UNITED STATES PATENT OFFICE.

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BRUSH AND METHOD OF MAKING THE SAME.

1,375,755. Specification of Letters Patent. Patented Apr. 26, 1921.

Application filed July 12, 1920. Serial No. 395,513.

To all whom it may concern:

Be it known that I, ROLLAND T. R. HASTINGS, a citizen of the United States, residing at Highland Park, in the county of Lake, State of Illinois, have invented certain new and useful Improvements in Brushes and Methods of Making the Same, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to brushes and more particularly to metal brushes designed for toilet use and the object of the invention is to provide a novel brush and method of making the same by which a strong, light, durable, efficient and sanitary brush may be cheaply manufactured.

The invention is particularly applicable to the manufacture of metal brushes of the kind shown and described in United States Patent No. 1,063,279, granted June 3, 1913, to Montgomery, and will be described in connection with the production of a brush of that type. The scope of the invention will be particularly pointed out in the appended claims.

In said drawing Figure 1 is a perspective view of a brush constructed in accordance with the present invention; Fig. 2 is a transverse section of the same illustrating particularly the connection of the brush back to the bristle carrying frame; Fig. 3 is a front elevation of a tube drawn to a small scale showing the manner of cutting the tube in the initial steps of the process; Fig. 4 is a view of the same tube showing the same in side elevation; Fig. 5 is a large view of the same tube having the portions on either side of the longitudinal slit bent away from each other into a common plane; Fig. 6 is a view illustrating these bent out portions and the intermediate metal formed into a plane and the uncut portion of the tube shaped into a handle; Fig. 7 illustrates the same structure with the center of the plane portion cut out and its sides flanged for the reception of the bristle carrying frame. Throughout these views like characters refer to like parts.

In carrying out my invention, I first take a metal tube 10 of suitable length and make a transverse cut 11 part way through the same, as clearly illustrated. The length of the tube 10 should be such that the length on one side of cut 11 will be sufficient to provide for the handle and the length on the other sufficient to provide for the back which is to engage the bristle carrying frame 12. After providing the transverse cut 11, that portion of the tube which is to be shaped into the back is slitted by a slit 13 extending from a point near the center of cut 11 to the end of the tube. As shown more particularly in Figs. 5 and 6, the tube may be composed of light-weight material having relatively thin walls. In the manufacture of an ordinary hair brush I commonly employ a tube having a length of about 9 inches and a diameter of about 1 inch. The thickness of the metal of the tube in such case, is 18 gage. I also preferably employ a tube of brass although, of course, other metals may be employed. After slitting the tube those portions of the tube which lie adjacent to the slit 13 are bent back away from each other so as to bring the portions or leaves 14 into the same plane. In connection with the formation of the leaves 14 I also provide a notch 15 in the adjacent end of the uncut portion of the tube 10. After bringing the parts into the relation which is illustrated particularly in Fig. 5, the leaves 14 and the metal of the tube lying between them is gradually worked into the plane portion 16, shown in Fig. 6. This result may be obtained by the use of dies or by manual operation. At the same time the uncut portion of the tube which is to be shaped into the handle 17 has its upper end bent down so to form the flange 18 in which the notch 15 is located. The flange 18 lies in a plane approximately at right angles to the axis of the tube. This portion of the tube is given the form of the handle 17 by repeated drawings under the action of suitable dies. These dies not only work the metal into a position to provide a handle which readily fits the hand but they completely close the end of the tube. The handle thus formed is light and at the same time extremely rigid and durable. The plane portion 16 which forms the back of the brush structure is next modified by cutting away its outer end so as to provide a tongue 18^a, as indicated by dotted lines in Fig. 6. If the tongue is not desired then this portion may be cut squarely across the top so as to give the proper length for the bristle carrying frame 12. Or if the end of the bristle carrying frame is to be entirely covered by a flange

then the plane portion 16 need not be trimmed at all. But whether the end of this portion is trimmed or not, I preferably cut away its center so as to give a central opening 19 surrounded by a complete frame of metal consisting of the side portions 20, 21, and the end portions 22, 23. To add to the appearance of the back a bead extends completely around the opening 19. The side portions 20 and 21 are also shaped to provide straight edged flanges 25 and 26 which are spaced the right distance to fit closely against the edges of the bristle carrying frame 12. When frame 12 has been placed in position between the flanges 25 and 26, the latter are pressed toward each other so as to closely engage the edges of the frame 12, as clearly illustrated in Fig. 2. As there shown the flanges 25 and 26 pass around the edges of the bristle carrying frame 12 from the upper face to the under face and thus closely embrace the same so as to securely hold the parts together. The end 22 of the frame also has its tongue 18^a pressed down around the outer end of the bristle carrying frame 12 so as to securely hold it against being withdrawn from the brush back. The edges of the flanges 25 and 26 preferably extend far enough to engage the adjacent row of bristle holding bosses 28. By making the edges of the flanges 25 and 26 straight, I improve the efficiency of the brush by providing a structure which cannot catch and pull the hair when in use. If the blank is cut short so as to omit the tongue 18^a, it will be obvious that the flanges 25 and 26 must be relied upon to hold the parts together. In such case a little solder may be applied to hold the parts together. Obviously where the blank is left full length and not trimmed to provide the tongue, then the end of the frame 12 will be as completely embraced by the flanged end as are the sides of the frame by the flanges 25 and 26. The tongue construction is however preferable and is that illustrated. The bristle carrying frame has a projection upon it which fits into the notch 15 in the flange 18 in the manner clearly illustrated in the aforesaid Montgomery patent. The bristle carrying frame is preferably of sanitary construction consisting of metal which is cast with a number of perforations 27 lying between strips carrying bosses 28 which are hollow and receive the ends of folded tufts of bristles 29, all as clearly pointed out in the aforesaid patent. By providing the opening 19 in the brush back and associating the same with a bristle carrying frame of the construction described, a sanitary brush is provided which can be readily cleansed by allowing water to pass through the openings 27 from the upper side of the back of the brush. The transverse curvature given to the frame 12 provides the necessary flare for the tufts of bristles 29. Of course, the end portions 22 and 23 of the brush back are shaped so as to conform to this curvature of its bristle carrying frame and to fit snugly against it. It should also be noted that the metal for the formation of the flange 18 is provided by giving the cut 11 in the tube 10 a direction which is not at right angles to the tube but slightly inclined thereto. As clearly illustrated, the ends of the cut are nearer the lower end of the tube than is the center of the cut. Obviously, in carrying out my invention the back formed out of the plane portion 16 might be differently shaped and constructed than by providing an opening 19 and its edges might be shaped very differently for attachment to the bristle carrying frame. Indeed, the latter might be connected to the back in many different ways and the invention herein disclosed still used. Various modifications and adaptations will readily occur to those skilled in this art and need not be enumerated.

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

1. In a process for making brushes, the operations of transversely cutting a metal tube part way through at a point intermediate of its length, slitting the tube longitudinally from one end to a point near the center of said transverse cut, bending the portions of the tube on each side of said longitudinal slit away from each other, forming said portions and the intervening metal into a portion to provide a back for the bristle carrying frame, and shaping the metal of the uncut portion of the tube into a handle.

2. In a process for making brushes, the operations of transversely cutting a metal tube part way through at a point intermediate of its length, slitting the tube longitudinally from one end to a point near the center of said transverse cut, bending the portions of the tube on each side of said longitudinally slit away from each other, forming said portions and the intervening metal into an approximate plane portion, cutting out the center of said plane portion so as to provide an open back for the bristle carrying frame, and shaping the metal of the uncut portion of the tube into a handle having a closed end.

3. In a process for making brushes, the operations of transversely cutting a metal tube part way through at a point intermediate of its length, slitting the tube longitudinally from one end to a point near the center of said transverse cut, bending the portions on each side of said longitudinal slit away from each other, forming said portions and the intervening metal into an ap-

proximately plane portion having parallel edges, said portion to serve as a back for the bristle carrying frame, shaping the metal of the uncut portion of the tube into a handle, flanging the parallel edges of said plane portion, and bending and forming said flanges about the edges of the bristle carrying frame.

4. In a process for making brushes, the operations of transversely cutting a metal tube part way through at a point intermediate of its length, slitting the tube longitudinally from one end to a point near the center of said transverse cut, bending the portions on each side of said longitudinal slit away from each other, forming said portions and the intervening metal into an approximate plane portion having parallel edges and an end having a tongue thereon, said portion to serve as the back of the bristle carrying frame, shaping the metal of the uncut portion of the tube into a handle, flanging the parallel edges of said plane portion, and bending and forming said flanges and said tongue about the edges of the bristle carrying frame.

In testimony whereof, I hereunto subscribe my name this 6th day of July, A. D., 1920.

ROLLAND T. R. HASTINGS.