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J. F. CONNOR

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BRUSH AND METHOD OF HOLDING BRISTLES IN SAME

Filed March 23, 1931

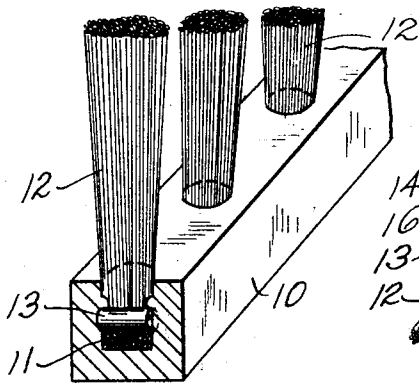


FIG. 1

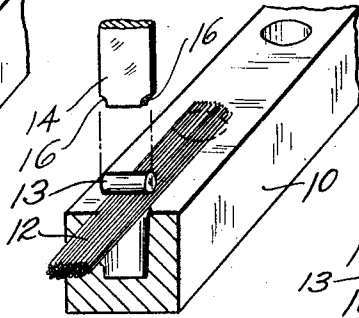


FIG. 2

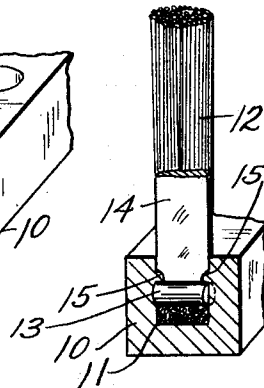


FIG. 3

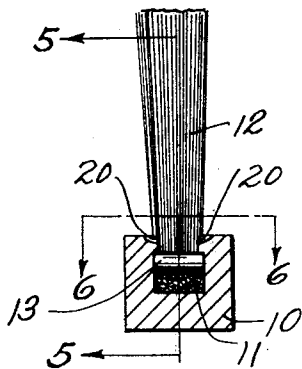


FIG. 4

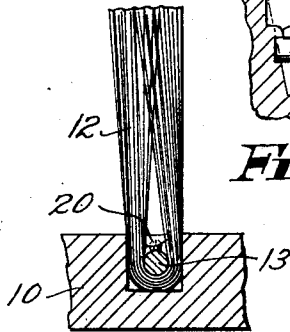


FIG. 5

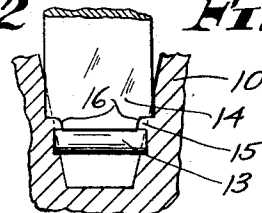


FIG. 3a

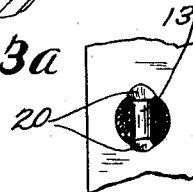


FIG. 6

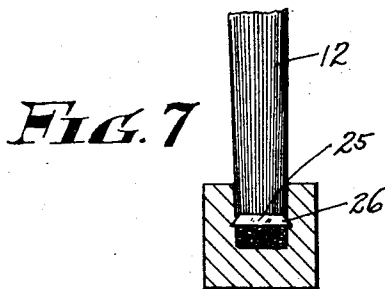


FIG. 7

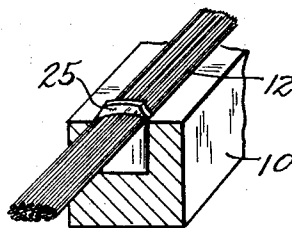


FIG. 8

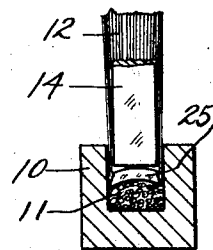


FIG. 9

Inventor

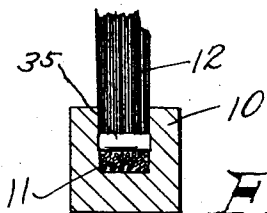


FIG. 10

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BRUSH AND METHOD OF HOLDING BRISTLES IN SAME

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This invention relates to brushes and is particularly concerned with a method of bristle setting by means of which the tufts of bristle are firmly secured to the brush blank or back. As applied to wooden back brushes, the practice has been to insert staples that can be driven into the wood across the folded tuft. Such method however, is impractical for metallic brushes and so the practice has arisen of drilling or casting the tuft socket entirely through the back, and then passing a wire through the loop end of the tuft and fastening it to the back of the brush. This procedure however, is objectionable for it is unsightly and is difficult to keep clean. Furthermore, it is expensive, for each tuft must be inserted manually in place, while the wire must be securely anchored at the end of each drawing operation. Again, the bristles are not held with sufficient degree of tightness.

The object of my invention therefore, is to produce a cheap, desirable and effective method of fastening bristles in place without the necessity for drilling or casting holes entirely through the back. Thus, the back may present a smooth unbroken appearance.

Referring now to the drawing, Fig. 1 is a perspective view of a brush embodying my invention; Fig. 2 is a similar view showing the first step in forming the tuft; Fig. 3 is a corresponding view showing the second step in the formation of the tuft; Fig. 3—A is a view through the brush showing the method of locking the tuft in place; Fig. 4 is a section taken through a brush, showing a modified form of securing means; Fig. 5 is a section taken on the line 5—5 in Fig. 4; Fig. 6 is a similar view taken on the line 6—6 in Fig. 4; Fig. 7 is a section through a brush embodying still another modified form of retainer; Figs. 8 and 9 are diagrammatic views indicating the steps used for locking the retainer in Fig. 7 in place, and Fig. 10 shows a modification of the bent retainer.

The method illustrated in Figs. 1 to 3—A inclusive embodies the insertion of a tuft within the socket, and the simultaneous anchoring of the tuft by forcing some of the metal adjacent the socket inwardly while the tuft is being inserted. If desired, a retainer

may be used in conjunction with the metal and to this end, the bristle back is indicated at 10, the socket at 11, the tuft at 12 and the retainer at 13. In Fig. 2 the retainer is shown as being positioned across the midportion of the tuft, while the bristles lie in extended position across the socket, while a diagrammatic representation of a punch is shown at 14 directly above the retainer. In Fig. 3, the punch has forced the retainer into the socket, and at the same time has folded the bristles during their movement into the socket.

To lock the tuft in place, I may form shoulders 15 by scoring the walls of the socket while the punch is forcing the tuft into place. Suitable recessed portions 16 adjacent the corners of the punch provide sufficient space for the scored metal to form the desired shoulders.

In Fig. 4, I have shown a modified form of retainer wherein the locking shoulders 20 are formed by peaning over the upper walls of the socket, rather than by a scoring action of the punch. Such peaned shoulders may be formed by the same tool which drives the retainer into the socket, so that the formation and locking of the tufts constitutes a simultaneous action.

Both of the retaining methods heretofore described show the retainer, as comprising a short length of wire which is substantially equal in length, to the diameter of the socket at the final imbedded position. In Figs. 7, 8 and 9, however, I have shown a modification wherein the retainer is in the form of a short strip of bent wire 25 with pointed ends 26. The bent strip is laid across the bristles, as is shown in Fig. 8, and is forced into the socket by the punch 14 without scoring or peaning the walls to provide retaining shoulders. The width of the punch is approximately equal to the diameter of the socket so that the compressive action exerted thereby, straightens the retainer and forces the pointed ends into the wall of the socket. I have found that where the socket is die cast, the metal is sufficiently soft to permit the ends of the retainer to be forced a slight distance into the wall, as is shown in Fig. 7.

In the modification of Fig. 10, the retainer 35 is held against the walls of the socket

merely by frictional contact therewith. This is obtained by utilizing a bent strip that when straightened is forced outwardly into engagement with the wall without necessarily being imbedded therein.

5 An important advantage of my invention is the fact that brush backs may be made of metal, and that the bristles may be held securely in place without necessitating the use of sockets which extend entirely through
10 the back. Furthermore, the exposed wire on the back of the brush may be entirely eliminated, and yet the tufts may be effectively locked in place by automatic machinery.
15 wherefore considerable savings may be effected in the manufacture of the brush.

I therefore claim:

1. In a brush, the combination with a back member having a socket therein, said socket
20 opening outwardly at one side of the brush and extending only partially therethrough, a bristle tuft folded within the socket and a retainer comprising a short length of wire extending across the fold, the back member
25 being deformed within the socket to provide shoulders that engage the wire only and hold it in place.

2. In a brush, the combination with a brush back having a socket therein, a folded tuft
30 within the socket, a retainer extending across the folded portion of the tuft and in close fitting engagement at its ends with the walls of the socket, and the wall of the socket being swaged only above the ends of the retainer
35 and within the fold of the bristles, the swaged portion operating to lock the retainer without binding the outer portion of the tuft.

In testimony whereof, I hereunto affix my signature.

JAMES F. CONNOR.