(No Model.)

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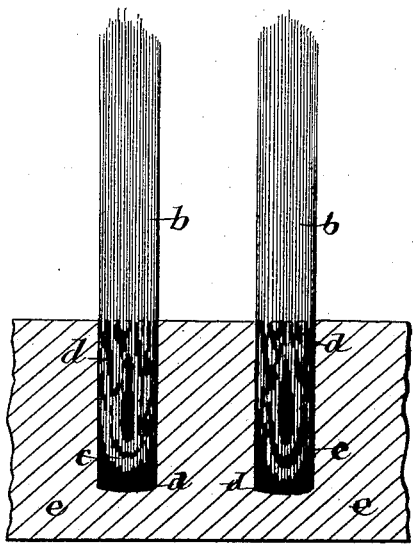
CEMENTING TUFTS OF FIBROUS MATERIAL IN BORED STOCKS FOR THE MANUFACTURE OF BRUSHES, &c.

No. 342,247. Patented May 18, 1886.



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UNITED STATES PATENT OFFICE.

RICHARD C. FELLOWS, OF NEW YORK, N. Y.

CEMENTING TUFTS OF FIBROUS MATERIAL IN BORED STOCKS FOR THE MANUFACTURE OF BRUSHES, &c.

SPECIFICATION forming part of Letters Patent No. 342,247, dated May 18, 1886.

Application filed July 1, 1881. Serial No. 36,910. (No model.)

To all whom it may concern:

Be it known that I, RICHARD C. FELLOWS, of New York city, in the county and State of New York, have invented a new and useful Improvement in Cementing Tufts of Fibrous Material in Bored Stock for the Manufacture of Brushes and for other Purposes, which improvement is fully set forth in the following specification.

This invention has reference more particularly to securing knots or tufts of bristles or other fibers by means of cement in holes bored in blocks, to form the stocks of hair and other brushes.

In order that the cement may be successfully employed to fasten the knots or tufts in the stock, it is necessary that the holes in the latter shall be filled thoroughly and uniformly with the cement without the presence of air-bubbles in the holes. With liquid cements it is very difficult or impossible to do this satisfactorily, as the air prevents the introduction of the liquid into the holes. The liquid may be poured or brushed over the bored stock, or the latter may be immersed in the liquid; but there is no certainty or uniformity in the result. Some of the holes become so full that when the knots or tufts are inserted the cement overflows and runs along the knot or tuft, disfiguring it. Others contain too little cement or none at all, so that the tufts or knots are readily pulled or drop out, and while more or less of the knots or tufts may be sufficiently perfect the brush itself is an unsalable and practically worthless article. The difficulty is overcome in the present invention by filling the holes with the proper quantity of cement in powder. It is afterward melted or liquefied in the hole and allowed to harden around the knot or tuft. In this way a determined quantity can be introduced into each hole, so that all receive the proper amount, neither less nor more, and there is no overflowing when the knots or tufts are inserted, and the latter are all held tightly. Moreover, in introducing liquid cement the face of the stock or brush back becomes coated with the cement, which has to be removed by dissolving it off with a solvent, whereas by introducing the cement in powdered form this is entirely avoided. The cement-powder preferably employed is a resin or gum-resin in connection with an earthy material—such, for example, as powdered resin and chalk or whiting. Cements solely of these materials are, when hardened, rather brittle, and to render them tough and flexible suitable ingredients to produce the best results are therefore added, such as Venice turpentine or boiled linseed-oil.

The foregoing method is applicable to tufts or knots of all kinds; but it is most advantageous to employ tufts or knots formed of looped bristles or fiber bent in the middle, as they are more easily inserted in the holes than fiber of full length, and as the cement, penetrating the eye of the loops, retains them in position with the greatest certainty.

The following description will enable those skilled in the art to which the invention appertains to make and use the same:

The stock or back having been prepared with holes bored part way through it, a mixture of, say, two parts pulverized resin and one part chalk or whiting is introduced into the holes by dusting the face of the stock by means of a brush dipped in the powder until the holes are filled. The surplus material being removed from the face of the stock, the latter is heated until the powdered cement is melted in the holes. A heated cast-iron form may be used for holding the stock or back during the heating operation. The knots or tufts of looped bristles or fiber made on any ordinary or suitable bunching-machine are then dipped in Venice turpentine, boiled linseed-oil, or other suitable thinning material and inserted by hand or by machinery in the holes, in which the cement has been kept liquid by the continued application of heat. After the knots have all been inserted the brush is allowed to cool, when the cement hardens around the ends of the knots, holding them securely.

The materials comprising the cement—to wit, resin in two parts, chalk one part, Venice turpentine one part, or boiled linseed-oil one-half part—can be melted together and the composition be pulverized and introduced into the holes. This avoids any liability to soil the face of the brush by the liquid material being scraped off in inserting the knots or tufts, as it is liable to do if the ends of the knots or tufts are dipped before insertion. The holes should be filled three-fourths or five-sixths full of the powdered cement, in order that each

hole may be full and not overrun when the cement is melted and the knots inserted.

Instead of liquefying the cement before inserting the knots or tufts, the powdered cement may be introduced in the holes, the knots or tufts inserted, and the cement afterward melted, although this is not so advantageous as first melting the cement.

Other cements besides that above described can be employed—as, for example, shellac in connection with a solution of rubber in naphtha. The shellac in powder is introduced into the holes and melted, and the ends or loops of the knots or tufts are dipped into the rubber solution before insertion.

Various other modifications can be made in the details without departing from the spirit of the invention, and portions of the invention can be used without the others.

The accompanying drawing, which forms a part of this specification, shows in cross-section a brush made according to this invention.

In the figure, *e* is the brush-stock, having perforations *d*, in which the tufts *b*, of looped fiber, are secured by cement, (represented by *c*.)

Having now fully described my said invention and the manner of carrying the same into effect, what I claim is—

The method of securing knots or bunches of bristles or fiber in a bored stock by introducing powdered cement, liquefying it in the holes by the action of heat, inserting the knots or tufts, and allowing the cement to set or harden, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

RICHD. C. FELLOWS.

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