(No Model.)

R. C. FELLOWS.

MANUFACTURE OF BRUSH KNOTS OR TUFTS OF BRISTLES.

No. 342,248. Patented May 18, 1886.

FIG. 1.

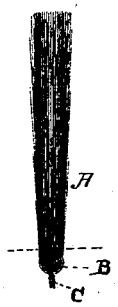


FIG. 2.

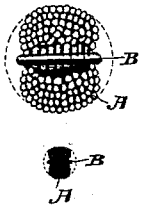
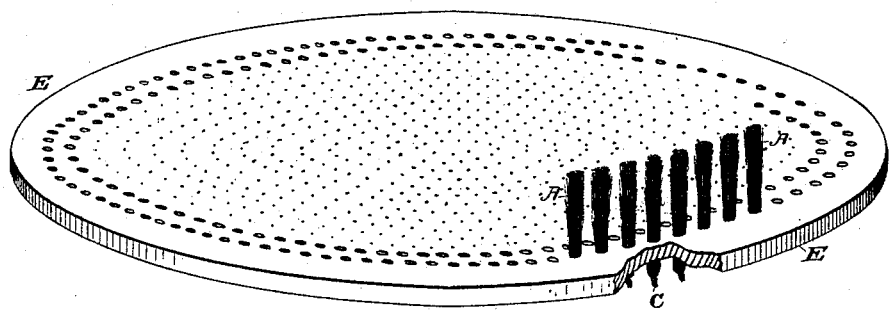


FIG. 3.

FIG. 4.



ATTEST.

Geo. T. Smallwood

J. Henry Kaiser.

INVENTOR.

Richard C. Fellows

by A. Pollok

his atty.

UNITED STATES PATENT OFFICE.

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

MANUFACTURE OF BRUSH KNOTS OR TUFTS OF BRISTLES.

SPECIFICATION forming part of Letters Patent No. 342,248, dated May 18, 1886.

Application filed April 26, 1884. Serial No. 129,418. (No model.)

To all whom it may concern:

Be it known that I, RICHARD C. FELLOWS, of the city, county, and State of New York, have invented a new and useful Improvement in the Manufacture of Brush-Knots or Tufts of Bristles and other Fiber, which improvement is fully set forth in following specification.

This invention has reference to the manufacture of the knots or tufts of bristles or other fiber to be secured in a block of wood or other material, to form a brush for toilet and other purposes. It has for its object to produce wired knots or tufts for setting in bored stock, each knot or tuft being so wired that the wire does not interfere with the close fitting of the knots in the holes, while at the same time it firmly binds the bristles or fiber together, and the knots or tufts can be cheaply manufactured.

In the making of toilet-brushes it is essential that the holes in the brush back or stock should be each well filled, for the presence of any considerable number of partly-filled holes (commonly called "gap-knots") renders the brush unsalable. It is also essential that the individual bristles should be firmly held, for if these begin to come out singly here and there the brush soon deteriorates in appearance and serviceableness. The importance of economy in the manufacture is obvious.

Good brushes have been and are made by the ordinary process of wire-drawing; but this is very expensive, especially in making solid-back brushes, when trepanning has to be resorted to. Moreover, in wire-drawing the knots or tufts are necessarily made by the person filling the brush-stock at the same time that operation is performed. It is therefore impossible, under this mode of brush-making, to produce the knots or tufts separately as an article of manufacture or commerce.

The putting up of the wired knots for separate use is a further object of this invention.

In order to produce the improved knots or tufts the proper number of bristles of double the length of the proposed knot are bunched together evenly. A short wire, fine and very pliable, is laid across the middle of the bristles. The ends of the wire are then bent down around the bristles. The latter are doubled, so that the ends come together, and the wire ends are twisted tightly together, so that the ring of wire, which encircles the bristles at the bight thereof, binds them closely. The new or improved knot thus consists of a number of doubled bristles or other fiber bound together at the bight or eye of the knot by a tightly-fitting ring of fine wire confined or prevented from spreading by the twisting together of the ends of the wire composing it. It has been specified that the wire is fine and very pliable. These qualities are essential, for it is impossible to make a tight-fitting ring with coarse or stiff wire, and it is also impossible, if coarse or stiff wire be used, to insert the knots in holes which the knots would fill. The hole must be larger than the knot, in order to allow the wire ring to enter.

It has been heretofore proposed to secure looped knots in bored wooden stock by wire staples, which encircle the bristles at the eye of the knot, and a shank formed by twisting together the ends of the wire of which the ring is made. The shanks of the staples were to be driven into the wood at the bottom of the holes. Staples of this kind are entirely unsuited to the purposes of the binding-wire of the present invention. They cannot, because the coarseness and stiffness of the wire will not allow it to yield or conform to the inclosed bristles, nor permit the twist to be made with sufficient tightness to close the ring upon the bristles. They are not capable of entering a hole which the knot or tuft can fill, because the wire ring is necessarily of larger diameter than the knot or tuft. The binding-wires of the improved knots are also wholly incapable of use as staples, neither the twisted wire ends nor the binding-ring having the strength required for the purpose. Heretofore, also, wire binding of various kinds has been devised; but they are objectionable, because of the defects stated, and also because they are liable themselves to become loose. In order to put up the knots or tufts in merchantable form they are confined in holders. The holder consists of a card, disk, or plate, of wood or other suitable material, provided with numerous holes slightly in excess of the diameter of the brush-knots. The knots or tufts are set singly in the holes until the card, disk, or plate is full. These cards can then be

packed in boxes and shipped and sold to brush-makers in any desired quantity. For setting, the operator draws the knots from the holes.

Instead of using a perforated card or its equivalent, the knots or tufts could be confined in eyelets. They are, however, much less convenient than the perforated cards. The knots are retained in holders by the elasticity of the doubled fibers.

In the accompanying drawings, Figure 1 is a view in vertical section of one of the improved knots or tufts; Fig. 2, views in cross-section on the dotted line, Fig. 1, looking down, and on different scales; Fig. 3, a side elevation showing the doubled bristles confined by an eyelet, and Fig. 4 a view showing a card partly filled with the improved knots for packing or sale. Figs. 1, 2, and 3 are all enlarged views.

A represents the bristles, doubled at the middle and there bound by the tight-fitting ring B, composed of a fine and pliable wire, whose ends are tightly twisted together, as shown at C. The knot or tuft at the eye is elliptical in cross-section, (see Fig. 2,) and the wire crosses the bristles in the direction of the shorter axis. Being small, it lies within the circle shown in dotted lines, of which the longer axis of the ellipse is the diameter. It therefore never interferes with setting the knots in the holes in the brush-stock; but the wired knots can be inserted in any hole which would receive them if unwired.

Soft-brass wire of the size commonly used for wire-drawing knots is preferred for the binding. In order to facilitate the manipulations, the binding-wire is originally somewhat longer than is necessary to form the ring B and twist C, and after the ends have been twisted the excess is cut off. This proceeding has also the further advantage of leaving the wire tightly twisted to the ends.

For transportation and sale, the wire knots of doubled bristles are inserted in holders consisting of eyelets D, (one for each knot,) or, preferably, of a card or disk, E, of wood, provided with a large number of holes. The wooden card may be three-eighths of an inch thick and three inches in diameter, although the dimensions and shape are not material, and may be varied at will. The number of holes in a card is also not material. The holes themselves should be slightly larger than required to receive the knots. The elasticity of the doubled bristles will hold them in place, if ordinary care in packing and transportation be used.

The knots or tufts, when used, can be secured in the brush stock or back in any ordinary or suitable way. They may, for example, be cemented in bored stock, as described in my application for improvement in the manufacture of brushes, filed June 27, 1881, and officially numbered 36,910.

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

The improved brush-knots described, the same being composed each of a number of bristles or fibers doubled at the middle and there encircled by a close-fitting ring of fine and pliable binding-wire, the ends of which wire are tightly twisted together, so as permanently to confine and bind together the bristles in the ring, the diameter of said ring being less than the greatest diameter of the knot at the eye, so that the wired knots can be set in holes which the bristles, when inserted, will sensibly fill, and the said knots being adapted for separate sale by insertion in holders, substantially as set forth.

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

RICHD. C. FELLOWS.

Witnesses:
A. POLLOK,
PHILIP MAURO.