This case is a division of Serial Number 445,695, Patent Number 1,867,487, filed April 19, 1930.

This invention relates to the manufacture of brooms and brushes, and has for its object to provide an improved form of tuft or knot of the bristle, bass or other brush making material which will hereinafter be referred to as bristle. In the ordinary method of manufacture of brooms the knots or tufts (hereinafter called knots) are bound at one end by hand and are then placed into the broom stock and set in pitch, and while the pitch is still soft, the operator gives a twist to the bristles which causes them to take up a flared or conical form.

Attempts have been made to manufacture knots by machinery by crimping or otherwise compressing a sleeve, cup or other binding around a bundle of bristles therein, and in some cases the contraction was made sufficiently tightly to cause the individual bristles to be flared out into a conical form; this conical form, however, was obtained by causing each bristle to be bent at the point at which it left the binding, and this bending has been found to weaken the bristles so that they soon tend to break at this point or the knots lose their conical form.

In accordance with the present invention, a knot is so formed that the individual bristles leave the binding in a direction inclined to planes passing through the axis of the knot and intersecting the bristles at the point at which they leave the sleeve. This results in a flared knot in which the flaring is permanent and obtained without causing the individual bristles to be bent or bruised.

In the preferred form of carrying out the invention, a knot of bristles is inserted into a conical sleeve provided with corrugations inclined to the generating lines of the cone and to the axis of the sleeve, and this sleeve is afterwards contracted around the bristles.

During the process of contracting, the sleeve is preferably rotated relatively to the free ends of the bristles, thus assisting in the maintenance of the bristles in the correct position in relation to the sleeve cup or binding.

Assuming that the bristles are straight, the geometrical form which the improved knot will take will be that of a hyperboloid of revolution.

In the accompanying drawing which illustrates the invention in a diagrammatic manner, Fig. 1 represents a preferred form of broom knot according to the invention.

Fig. 2 represents a preferred form of sleeve prior to its threading on to the knot of the bristles.

In the preferred method of carrying out the invention a sleeve a of conical form is provided with corrugations inclined to the generating lines of the cone and to the axis of the sleeve. The sleeve is preferably open at the bottom but may be a closed sleeve or cup.

A knot of bristles is then inserted into this sleeve (or the sleeve is threaded on to the bristles) at the end of the sleeve of greater diameter passing just over the knot.

The sleeve is then contracted by dies which preferably follow the inclined corrugations there-in, and the sleeve is preferably given a rotating movement relatively to the top of the knot.

With this improved knot the individual bristles leave the sleeve or cup in a direction slightly inclined to planes passing through the axis of the knot and intersecting the bristles at the points at which they leave the sleeve.

Suitable apparatus for making the improved knot is described in specification No. 445,694.

We claim:

1. A knot for insertion into a broom or brush, bound at one end, comprising a bundle of bristles, and a sleeve clamped around the end of the bristles, each bristle leaving the sleeve in a direction inclined to the axis of the knot and the plane passing through the axis of the knot and intersecting the bristle at the point at which it leaves the sleeve, substantially as described.

2. A knot for a broom or brush, comprising a bundle of bristles, and a sleeve clamped around the bristles, the sleeve being of conical form and provided with grooves inclined to the generating lines of the sleeve.

3. A knot for a broom or brush comprising a bundle of bristles, and a sleeve clamped around the bristles and in which each bristle is straight throughout its length and is inclined to the axis of the knot while not intersecting said axis.

4. A knot for insertion into a broom or brush comprising a number of straight bristles secured in a binding near one end and flared so that the various bristles lie upon a surface of a hyperboloid of revolution.

5. A knot for insertion into a broom or brush bound at one end comprising a bundle of bristles, a binding means secured around the end of the bristles, each bristle leaving the sleeve in a direction inclined to the axis of the knot and the plane passing through the axis of the knot and intersecting the bristle at the point at which it leaves the sleeve, substantially as described.

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