

UNITED STATES PATENT OFFICE

2,670,489

BRUSH AND SYNTHETIC BRISTLES FOR
IMPARTING ANTISEPTIC PROPERTIES

Roy Cross, Kansas City, Mo.; Mary Forbes Cross
and First National Bank of Kansas City, execu-
tors of said Roy Cross, deceased, assignors to
Kansas City Testing Laboratory, Kansas City,
Mo., a corporation of Missouri

No Drawing. Application April 11, 1946,
Serial No. 661,336

2 Claims. (Cl. 15-167)

1

An object of this invention is the production of an impregnated synthetic bristle which may be used as a tooth brush, a brush for medicinal agents, an abrasive brush, a polishing brush and for other purposes.

A purpose is to produce bristles primarily for use in brushes which will cleanse by mechanical action, by abrasive action, by chemical action and in certain cases have a tonic and medicinal effect.

In making the product of this invention, one method comprises mixing various additive agents to a plastic mass, which mass is then extruded through holes or drawn out in a filament to produce bristles or the plastic mass may be spread thin and cut into very narrow strips to produce the bristles.

Among the basic substances used for the carrier are cellulose acetate, cellulose nitrate, nylon, vinylidene chloride and other plastics or polymers of styrenes of suitable thermoplastic character-istic.

In these cases, the abrasive, medicinal or other agents are preferably mixed in powder or fibrous form with the base in powder form. The material is then fused and while in the molten state is drawn out, spread or extruded to produce the thin bristles.

Among the agents used for incorporation into the bristles or into the plastic material before it is formed into the bristles are antiseptics, including specifically as examples, alkali or alkaline earth salicylates, alkali or alkaline earth fluorides, alkali or alkaline earth phosphates, phosphoric acid, magnesium oxide and magnesium fluoride.

In making bristles for a tooth brush, a representative composition is as follows:

	Parts
A polymer of styrene -----	94
Magnesium salicylate -----	2
Magnesium fluoride -----	1
Calcium phosphate -----	2
Borax -----	1

traces of manganese, iron, nickel, cobalt, copper, chromium, zinc in quantities of less than 0.01%.

In each composition, it is often desirable to use tricresyl-phosphate in sufficient quantity to give the desired plasticity and consistency. This ordinarily would be about 5% of the total mixture. In many cases, it is desired to add an abrasive agent for a tooth brush bristle. This abrasive agent in this case would be of the nature of pumicite or other material not having a higher degree of hardness than pumicite. The amount

2

may vary within wide limits, a representative amount being 5% of the total mixture.

When an abrasive action is required against very hard material such as in the manufacture of polishing brush for bronze, brass, chromium finishes and the like, then a hard abrasive material of high degree of hardness may be used such as carborundum powder for incorporation into the bristle.

Instead of ready prepared plastics, a mixture of the following in the following proportions may be used as a base:

	Parts
Nitrocellulose of suitable viscosity -----	14
Tricresyl phosphate -----	2
Ester gum -----	7.5
Kettle boiled linseed oil -----	1.5

These materials are fused together at temperatures up to 300° C. and the minerals incorporated while hot. Ordinarily, it is most desirable to use synthetic plastic materials. It is often desirable to add as much of the chemical substances as can be carried without reducing the strength and pliability of the bristle.

In making the bristle, a nylon plastic may be incorporated with 10% of magnesium oxide, 10% pumicite and $\frac{1}{10}$ of 1% magnesium fluoride. It will be obvious that the various combinations may be used in accordance with the results desired.

Bristles made in the above manner are suitable for manufacture of many types of brushes including a tooth brush for mechanical effect, for cleansing, for neutralizing, for chemical and tonic effect. For example, magnesium fluoride incorporated to the extent of only one hundredth of one percent is beneficial in maintaining the health of dental tissues. At the same time when it is desired to obtain an abrasive effect, as much as 10% of an abrasive such as soft pumicite may be used.

For special polishing and buffing brushes for metals, wood, stone, leather, etc. a large amount of harder abrasives is desired. An abrasive for this purpose may be siliceous, glassy or in the nature of tripoli.

Bristles for hair brushes may have incorporated in them elements for medicinal effect. It is found that percentages of arsenic, for example, .01% is often sufficient for maintaining the health of the scalp and hair. Arsenic is added preferably in the form of arsenic trioxide. It is also effective in eliminating and preventing dandruff.

Curry brushes for cattle and horses and other

3

animals in which the bristles are impregnated with arsenic and percentages of other elements are extremely useful in maintaining the health and nice appearance of the coats.

The bristles for clothes brushes have incorporated in them compositions such as dichloro-diphenyl-trichloroethane, difluoro-diphenyl-trichloroethane and anti-moth chemicals.

The bristles for paint brushes may have incorporated in them preservatives to prevent the softening of the bristles.

Scrub brushes may be of the same type as polishing and buffing brushes.

Hand brushes, nail brushes and medicinal brushes may have incorporated in the bristles, numerous substances for medicinal action particularly antiseptics such as iodized materials and skin sedatives.

I claim:

1. A synthetic tooth brush bristle which comprises a thermoplastic resin having uniformly incorporated therein before drawing a fluoride.
2. A tooth brush comprising synthetic bristles

4

which consist essentially of a thermoplastic resin having uniformly incorporated therein before drawing an antiseptic agent comprising a fluoride in sufficient amount that a portion of said fluoride is imparted to the tooth when said brush is applied thereto.

ROY CROSS.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
2,099,688	Hill	Nov. 23, 1937
2,214,397	Austin	Sept. 10, 1940
2,216,835	Carothers	Oct. 8, 1940
2,226,529	Austin	Dec. 31, 1940
2,249,686	Dykstra	July 15, 1941
2,273,364	Mallory	Feb. 17, 1942
2,309,021	Stonehill	Jan. 19, 1943

OTHER REFERENCES

Ser. No. 715,003, Wulff (A. P. C.), published April 27, 1943.