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METHOD AND MATERIAL FOR PREVENTING THE TARNISHING OF SILVERWARE

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This is an improvement on the method and material patented by Grinnell Jones of Cambridge, Mass., Patent No. 1,766,646, June 24, 1930, for preventing the tarnishing of silverware.

The Jones patent described a fabric for protecting silverware from tarnish comprising a material suitable for wrapping impregnated with finely divided silver, or a compound thereof, which would combine with the tarnishing gases in the atmosphere and thereby protect the silver wrapped in the protecting material.

The Jones patent particularly describes a wrapping material impregnated with silver oxide formed by treating a cloth with silver nitrate and precipitating the silver with sodium carbonate thus forming the oxide, though it is not limited to a cloth treated with such a silver compound so formed. Many protecting cloths so made have been sold commercially and have been found to give good protection in practice. The method particularly shown by Jones, however, produces only a brown fabric of so powerful a color that it will overpower other dyes and moreover it is difficult to make different batches with exactly the same color. This does not affect the protective power of the cloth but does affect its saleability as many users prefer bags of another color.

We have found that a cloth may be impregnated with a silver compound which will protect silver enclosed in it from tarnish and that the cloth may be of any color and we have also made several other improvements in the Grinnell Jones invention which are described in the following specification.

We first dye our cloth in any suitable manner with any suitable fast color, the vat colors and naphthol colors being preferred. Obviously no color should be used which will be affected injuriously by the reagents hereinafter described.

We take a suitable dyed napped cotton cloth, or plush, or similar suitable material, and pad it with a solution containing 12 oz. of silver nitrate, more or less, dissolved in a gallon of water. This may be done in a padder in which the cloth is passed through the solution and then through a squeeze roll to remove the excess of silver nitrate. Then, without drying the cloth, we pass it into a solution of yellow prussiate of soda. This solution may contain 15 lbs. of the prussiate of soda to 40 gallons of water to which we find it desirable to add five gallons of a colloid which will cause a finely divided precipitate. Tragasol we have found best for this purpose though any other suitable colloid may be used. This operation causes the precipitation of the silver as silver ferrocyanide in accordance with the following reaction:

$$4AgNO_3 \text{ plus } Na_4Fe(CN)_6 = Ag_4Fe(CN)_6 \text{ plus } 4NaNO_3$$

This precipitation may be performed in any precipitating tank, for instance, what is called a "jigger" in which the cloth impregnated with silver nitrate is lead from a roll through the bath under rollers and up to another roll. It is then passed back again through the solution and so on, back and forth, until the silver ferrocyanide is properly precipitated, usually passing it back and forth six ends will be enough. The bath is then filled with water and the material is washed in cold water by passing back and forth through the tank four to six ends until thoroughly freed from silver nitrate and prussiate of soda. The water in the padder and in the precipitating bath is preferably at room temperature.

By this means dyed cloth is impregnated with the white silver ferrocyanide which scarcely affects the color of the cloth. If the cloth used is plush it will be desirable to use a kettle instead of a jigger for the precipitating bath and washing.

We consider this cloth an improvement on the disclosure of the Jones patent in the following particulars:

(1) A cloth of almost any color may be used, thus pleasing customers.

(2) By reason of the use of the colloid the silver is very finely precipitated so that more protection is obtainable from the same amount of silver.

(3) By precipitating in a cool solution the silver is precipitated in a more finely divided form and gives better protection.

The percentage of silver used may be varied considerably but it is not desirable to use too great a percentage of silver. Less protection is obtained rather than more if a very large percentage of silver is used. If too much silver is used, it is likely to be in a dense form which does not react so completely with the sulphur gases. The best protection is obtained when the silver is spread through the material in a very finely divided precipitate.

The expressions "finely divided precipitate" and the like are used in this specification to mean a precipitate as fine as that obtained by the use of liquid at room temperature in the precipitating bath.

The fabric may be used in any suitable way, as a bag, a lining for drawers or boxes. It will

give partial protection even if placed loosely in a drawer with the silver.

We claim:

1. A fabric for protecting silverware from tarnish comprising a material suitable for wrapping, impregnated with silver ferrocyanide.

2. A fabric for protecting silverware from tarnish comprising a material suitable for wrapping, impregnated with silver ferrocyanide in a finely divided precipitate.

3. A fabric for protecting silverware from tarnish comprising a material suitable for wrapping, impregnated with silver ferrocyanide precipitated in the fabric in connection with an organic colloid.

4. The method of protecting silverware from tarnish which consists in impregnating a fabric with silver ferrocyanide and surrounding the silverware by said impregnated fabric.

5. The method of protecting silverware from tarnish which consists in impregnating a fabric with silver ferrocyanide precipitated in a solution containing an organic colloid so as to cause the silver ferrocyanide to be precipitated in a very finely divided form throughout the material and surrounding the silverware by said impregnated fabric.

6. A fabric for protecting silverware from tarnish comprising a material dyed with a suitable dyestuff and impregnated with silver ferrocyanide precipitated in the fabric in connection with an organic colloid.

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