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COMPOSITION FOR AND METHOD OF PREVENTING SILVER FROM TARNISHING

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11 Claims. (Cl. 134—1)

This invention relates to a new method of treating metals to prevent them from tarnishing and to the chemical preparation used in the treatment. Although applicable to any tarnishable metal, the new method is especially useful for the treatment of silverware which must retain the original lustre and polish after treatment, since the new method of protection produces no discernible change in the finish.

Many efforts have previously been made to prevent tarnish. The most used methods consist in applying lacquer, shellac or grease to the surface to be protected, but none of these methods have proved satisfactory. Lacquer and shellac are troublesome to apply and peel off after a time, permitting the article to tarnish and further marring its appearance by the partly peeled coating clinging thereto. Grease is even more unsatisfactory since it makes the article coated both unpleasant to the touch and to the sight.

Accordingly the present invention avoids the use of these undesirable materials and comprises a process of coating the article to be protected with a film of wax, the wax film being so hard and so thin that it is practically invisible and imperceptible to the touch. Although the mere coating of an article with wax is relatively simple, it has been found much more difficult to apply a wax of sufficient hardness in a continuous film so thin as to evade detection by the touch and sight of a normal person.

To accomplish this novel result a wax of the order of hardness of carnauba wax is emulsified into the form of a paste with water and an emulsifying agent. This paste is applied liberally to the polished surface to be protected and immediately thereafter all visible traces of the paste are removed by rubbing or brushing until the original lustre returns to the surface.

A formula which has been found especially satisfactory for the wax paste is:

Carnauba wax	-----lbs. av.	4 1/2
Stearic acid	-----ozs. av.	18
Triethanolamine	-----ozs. fl.	5
Water (distilled)	-----gals.	4

Other formulas in which the proportions are varied have also been found quite satisfactory. For example, the water content may be increased to six gallons without noticeable detriment to the product. Many substitutions for the ingredients may likewise be made.

In place of carnauba wax, candelilla wax or japan wax, hydrogenated castor oil or other hard wax may be used and to this wax may be added

a small amount of a resin such as shellac or a soft wax such as ceresine, paraffin or beeswax. The soft waxes appear to aid the hard wax in spreading upon the surface as does the excess of stearic acid in the preferred formula.

The stearic acid in the formula given may be replaced by another fatty acid, for example, oleic acid, or reduced in amount if some soft wax is present to aid the hard wax in spreading.

Other bases which form satisfactory emulsifying soaps with fatty acids may be substituted for triethanolamine. Caustic soda and caustic potash have been used with fair success.

Other examples of satisfactory formulas are:

Carnauba wax	-----ozs.	1 1/2
Paraffin wax or ceresine	-----oz.	1/2
Triethanolamine	-----cc.	3.1
Stearic acid	-----oz.	1/4
Water	-----cc.	250
Carnauba wax	-----ozs.	1 1/4
Beeswax	-----oz.	1/4
Mineral oil	-----cc.	100
Stearic acid	-----ozs.	1 1/2
Sodium hydroxide	-----cc.	28

Solution (4 normal)

Water	-----cc.	250
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In making the emulsion it has been found convenient to first dissolve in part of the water the triethanolamine and stearic acid. This solution is heated nearly to boiling and agitated briskly while the wax is added slowly in a molten state. The remainder of the water is added last. The result is a beautiful white creamy emulsion.

A single application of the new paste is usually sufficient to protect a surface completely for many months, but if extraordinary precaution is to be taken the application of the paste may be repeated two or even three times to assure a thorough covering of the surface. Ordinarily the paste is applied with a small soft cloth and the surface wiped and polished with a clean soft cloth or soft brush. The use of a buffing wheel or other means for applying or removing the excess paste is, however, within the contemplation of this invention.

As stated in the early part of this specification the new method and paste are applicable to all tarnishable surfaces. However, on account of the particular uses to which silver is put, the new method and paste are especially adapted to use thereon. Silver plate, ornamental silver objects and silver tableware have all been successfully treated and brass railings, push plates, door

knobs and ornamental copper are examples of other tarnishable objects which may be treated advantageously.

We claim:

- 5 1. A composition for use in preventing the tarnishing of silverware that is adapted to be spread upon the silverware and the excess thereafter removed so as to leave only a substantially imperceptible film on the surface of the silverware that consists of an emulsion of approximately the following composition:

10 Carnauba wax	-----lbs. av--	4 1/2
Stearic acid	-----ozs. av--	18
Triethanolamine	-----ozs. fl--	5
15 Water	-----gallons--	4

- 20 2. A composition for use in preventing the tarnishing of silverware that is adapted to be spread upon the silverware and the excess thereafter removed so as to leave only a substantially imperceptible film on the surface of the silverware that consists of an emulsion of approximately the following composition:

25 Hard wax	-----lbs. av--	4 1/2
Stearic acid	-----ozs. av--	18
Triethanolamine	-----ozs. fl--	5
Water	-----gallons--	4

- 30 3. A method of treating polished silver to prevent the tarnishing thereof which comprises spreading upon the surface thereof an emulsion containing carnauba wax, water, triethanolamine and an excess of stearic acid over the amount necessary to react with the triethanolamine and immediately thereafter rubbing from the silver all perceptible traces of the emulsion.

- 35 4. A method of treating silverware to prevent the tarnishing thereof which comprises applying to the surface thereof an emulsion of the formula:

40 Carnauba wax	-----lbs. av--	4 1/2
Stearic acid	-----ozs. av--	18
Triethanolamine	-----ozs. fl--	5
Water (distilled)	-----gallons--	4

- 45 and then removing the visible excess of the emulsion from the surface.

- 50 5. A method of treating silverware to protect it against tarnish which comprises spreading upon the surface a paste comprising carnauba wax, an emulsifying agent and an excess of stearic acid and subsequently rubbing the excess of paste from the surface.

- 55 6. A composition for use in preventing the tarnishing of silverware by application to the metal and the excess thereafter removed so as to leave only a substantially imperceptible film on the surface thereof which comprises a stable water emulsion paste of about 3 parts by weight of a hard wax and about 1 part by weight of an emulsifying mixture of triethanolamine and fatty acid of the group consisting of stearic acid and oleic acid, the fatty acid being in excess of

that required to neutralize the triethanolamine and said excess of fatty acid acting as a spreading agent for the hard wax.

7. A composition for use in preventing the tarnishing of silverware by application to the metal and the excess thereafter removed so as to leave only a substantially imperceptible film on the surface thereof which comprises a stable water emulsion of about 3 parts by weight of a hard wax of the group consisting of carnauba wax, candelilla wax, japan wax and hydrogenated castor oil wax and about 1 part by weight of an emulsifying mixture of triethanolamine and a fatty acid of the group consisting of stearic and oleic acid, the fatty acid being in excess of that required to neutralize the triethanolamine and said excess of fatty acid acting as a spreading agent for the hard wax.

8. A composition for use in preventing the tarnishing of silverware by application to the metal and the excess thereafter removed so as to leave only a substantially imperceptible film on the surface thereof which comprises a stable water emulsion of about 3 parts by weight of carnauba wax and about 1 part by weight of an emulsifying mixture of triethanolamine and stearic acid, the stearic acid being in excess of that required to neutralize the triethanolamine and said excess stearic acid acting as a spreading agent for the carnauba wax.

9. A method of treating silver to prevent the tarnishing thereof which comprises spreading upon the surface of the metal a water emulsion of about 3 parts by weight of hard wax and about 1 part by weight of an emulsifying mixture of triethanolamine and a fatty acid of the group consisting of stearic acid and oleic acid, the fatty acid being in excess of that required to neutralize the triethanolamine and said excess of fatty acid acting as a spreading agent for the hard wax, and then removing surplus emulsion.

10. A method of treating silverware to protect it against tarnish which comprises spreading upon the surface thereof a plastic emulsion comprising a water dispersion of a hard wax, an emulsifying agent and a spreading agent, and subsequently rubbing the excess of said plastic emulsion from the surface.

11. A method of treating silverware to protect it against tarnish which comprises spreading upon the surface thereof a water emulsion paste of a hard wax of the group consisting of carnauba wax, candelilla wax, japan wax and hydrogenated castor oil wax, an emulsifying agent of the group consisting of potassium, sodium and triethanolamine salts of oleic and stearic acid and a soft waxy spreading agent of the group consisting of soft waxes and fatty acids, and then removing surplus paste.

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