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METAL POLISH

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This invention relates to cleaning and polishing compositions or admixtures, and more particularly to a cleaning and polishing admixture for removing tarnish and rain spots from metals which are exposed to the weather, such as nickel, brass, and to some extent chromium plated surfaces.

According to M. de Keghel, Rev. prod. chim., 25, 327, metal polishes may in general be divided into two classes. The first class contains an abrasive suspended in a soap solution. The second class, and that which finds less frequent use, is a cleaner which may be an abrasive suspended in a soap solution to which has been added a chemical cleaner such as ammonium oxalate, oxalic acid, etc.

Polishes falling within the first class require a large amount of manual work in order to produce a clean, lustrous surface. Moreover, since the cleaning is the result of abrasion, more or less of the metallic surface is removed with each cleaning. Where, as is frequently the case, a lustrous metal is plated over a different base there is danger of eventual corrosion of the plating to expose the base metal. The ever present danger connected with the use of the second class of polishes lies in incomplete removal of the chemical cleaning agent. Unless the surface is carefully washed to remove the chemical, the surface will be badly attacked by the corrosive action of the cleaning agent. Moreover, the necessity of washing is a detriment in that the very luster which is being sought is destroyed by dirty water.

An object of this invention is to provide a cleaning and polishing composition for use upon metallic surfaces. A further object is to provide a cleaning and polishing composition which will not necessitate washing in order to remove the excess of polish. A further object is the provision of a composition which will not corrode the metallic surface if left in contact with it. Another object of our invention is to provide a cleaning and polishing composition which will render the metallic surface more resistant to tarnishing and rain spots.

These objects are accomplished by our invention, which, in one of its aspects, comprises the addition of a wetting out agent to an aqueous solution of a metallic cleaner and admixture with the aqueous solution of a solution of wax in an organic solvent.

By way of illustration of our invention, the following formula is given:

Dissolve 7.5 parts by weight of paraffin wax and 5 parts of oleic acid in 225 parts of warm commercial o-dichlorbenzene and stir in 50 parts of infusorial earth. Separately dissolve 5 parts by weight of ammonia oxalate, 1.5 parts of strong (28%) aqueous ammonia and 2.5 parts of 1-isopropyl-naphthalene-2-sodium sulfonate in 500 parts of water. The pasty mass first prepared is poured slowly with rapid stirring into the aqueous solution. The resulting creamy admixture or emulsion is an excellent polish for metallic surfaces.

We have tested polishes which fall within our invention, and of which the above example is an illustration, by comparative polishing of samples of nickel which had been exposed to the weather for several days. With our composition much less time was required to obtain a clean surface than was required with most commercial preparations. The few commercial polishes which gave a clean surface at all comparative with our polish were much less satisfactory because they removed a great deal more of the surface of the metal itself than did our polish. This was established by making scratches upon the metallic surface. Scratches thus made upon the metal were much more readily removed by the commercial cleaners than by our composition, indicating a greater corrosive action by the commercial cleaners. Moreover, samples of nickel which had been polished with commercial preparations tarnished badly when exposed to the weather for twelve hours, while samples which had been cleaned with our composition remainder unaffected for more than forty-eight hours under identical conditions.

We prefer 1-isopropyl-naphthalene-2-sodium sulfonate as our wetting out agent. However, we do not wish to be limited to this single substance, since any alkylated sulfonic acid derivative of an aromatic hydrocarbon containing at least two benzene nuclei will function as a wetting out agent. In the example given above, we have shown the use of paraffin wax. Carnauba wax may be substituted for paraffin wax in the above example. In fact any solid wax falls within the contemplation of our invention, and by wax we mean not only esters of high molecular weight and formed from higher monohydric alcohols, but also the solid higher paraffin hydrocarbons of more or less indefinite composition.

We prefer to add the wax to the organic solvent in an amount somewhat less than that amount required to saturate the solvent at 25° C. We do not wish to be limited to this precise procedure since the amount of wax will vary with different solvents. In general, we prefer organic solvents which should be immiscible with water in large part at least, and which preferably boil between 100° C. and 200° C. As examples of organic solvents which we have tested and found to be satisfactory are solvent naphtha, tetra-hydro-naphthalene, spirits of turpentine and o-dichlorbenzene. We have found it advantageous to add a small amount of soap or soapy material to our composition in order to stabilize the emulsion or admixture. To this end we find it desirable to add

a fatty acid such as oleic, stearic, or palmitic acid to the organic solvent and in order to form this soap to add an alkaline material such as ammonium hydroxide to the aqueous solution, the amount of ammonium hydroxide being equivalent to the fatty acid. In general, we add the fatty acid to the extent of 10% of the amount of organic solvent. More may be used, but we find that no marked improvement is effected thereby.

We have found it advantageous to add to our composition a limited amount of abrasive material such as infusorial earth, Tripoli powder, powdered silica or the like. We have found it of advantage to add this abrasive material to the organic solution prior to admixture with the aqueous solution, the abrasive being added in amount sufficient to make a moderately thick paste.

We have found that the addition of about 1% of cleaning agent to the aqueous solution gives effective results. As cleaning agents we have used oxalic acid, citric acid, acetic acid and tartaric acid and the ammonium salts thereof. Other alkali metal salts may be employed.

The cleaning action of the composition is accomplished by the joint action of the cleaning agent such as the ammonium oxalate, and the abrasive. The aqueous solution wets the metallic surface in preference to the non-aqueous organic solution because the aqueous solution contains the wetting out agent. The evaporation of the non-aqueous organic solvent causes the deposition of a thin film of wax upon the surface of the metal. The film of wax protects the metal and prevents the excessive action of the chemical cleaner even if the polish is incompletely removed. The film of wax also serves to protect the metal from the action of the air and any corrosive gases present therein, and serves to prolong the lustrous appearance of the metal. By our polish the luster upon metallic surfaces, such as brass, nickel and chromium, is considerably preserved. Our composition of matter may also be applied to the polishing of ornamental silver and similar surfaces.

Since many embodiments of this invention differing widely in one or more respects may be made without departing from the spirit of our invention, it is to be understood that we do not limit ourselves to the foregoing examples or description except as indicated in the following claims:

What is claimed is:

1. A polish for metallic surfaces which contains in admixture wax and a higher fatty acid dissolved in an organic solvent which is immiscible with water in large part at least and an alkaline aqueous solution containing a cleaning agent of the water soluble aliphatic acid group consisting of oxalic acid, acetic acid, tartaric acid, citric acid and the alkali salts of said acids and a wetting out agent.

2. A polish for metallic surfaces which contains in admixture paraffin wax and oleic acid dissolved in o-dichlorbenzene, infusorial earth, and an aqueous solution containing ammonium oxalate, ammonium hydroxide and 1-isopropyl-naphthalene-2-sodium sulfonate.

3. A polish for metallic surfaces which contains in admixture paraffin wax and oleic acid dissolved in o-dichlorbenzene, and an aqueous solution containing ammonium oxalate, ammonium hydroxide and 1-isopropylnaphthalene-2-sodium sulfonate.

4. A polish for metallic surfaces which contains in admixture wax and a fatty acid of the group consisting of oleic acid, stearic acid and palmitic acid dissolved in a member of the group consisting of o-dichlorbenzene, solvent naphtha, tetra-hydro-naphthalene, and spirits of turpentine and an aqueous solution containing a member of the group consisting of oxalic acid, citric acid, acetic acid, tartaric acid and the ammonium salts thereof, an alkaline material such as ammonium hydroxide and an alkylated sulfonic acid derivative of an aromatic hydrocarbon containing two benzene nuclei.

5. A polish for metallic surfaces which contains in admixture wax and a fatty acid of the group consisting of oleic acid, stearic acid and palmitic acid dissolved in a member of the group consisting of o-dichlorbenzene, solvent naphtha, tetra-hydro-naphthalene, and spirits of turpentine and an aqueous solution containing a member of the group consisting of ammonium oxalate, ammonium citrate, ammonium acetate and ammonium tartrate, an alkaline material such as ammonium hydroxide and alkylated sulfonic acid derivative of an aromatic hydrocarbon containing two benzene nuclei.

6. A polish for metallic surfaces which contains, in admixture, wax and a higher fatty acid dissolved in an organic solvent of the group consisting of solvent naphtha, tetra-hydro-naphthalene, spirits of turpentine and o-dichlor-benzene and an alkaline aqueous solution containing a cleaning agent of the water soluble aliphatic acid group consisting of oxalic acid, acetic acid, tartaric acid, citric acid and the alkali salts of said acids, and a wetting out agent.

7. A polish for metallic surfaces which contains, in admixture, wax and a higher fatty acid dissolved in an organic solvent which is immiscible with water in large part at least and an alkaline aqueous solution containing a cleaning agent of the water soluble aliphatic acid group consisting of oxalic acid, acetic acid, tartaric acid, citric acid and the alkali salts of such acids, and an alkylated sulphonic acid derivative of an aromatic hydrocarbon containing at least two benzene nuclei.

8. A polish for metallic surfaces which contains, in admixture, wax and a higher fatty acid dissolved in an organic solvent which is immiscible with water in large part at least and an alkaline aqueous solution containing a cleaning agent of the water soluble aliphatic acid group consisting of oxalic acid, acetic acid, tartaric acid, citric acid and the alkali salts of such acids, and 1-isopropyl-naphthalene-2-sodium sulfonate.

9. A polish for metallic surfaces which contains, in admixture, wax and oleic acid dissolved in an organic solvent which is immiscible with water in large part at least and an alkaline aqueous solution containing a cleaning agent of the water soluble aliphatic acid group consisting of oxalic acid, acetic acid, tartaric acid, citric acid and the alkali salts of such acids, and a wetting out agent.

10. A polish for metallic surfaces which contains, in admixture, wax and a higher fatty acid dissolved in an organic solvent which is substantially immiscible in water and has a boiling point between 100° and 200° C. and an alkaline aqueous solution containing a cleaning agent of the water soluble aliphatic acid group consisting of oxalic acid, acetic acid, tartaric acid, citric acid and the alkali salts of said acids, and a wetting out agent.

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