Patented Feb. 14, 1933 1,897,686

UNITED STATES PATENT OFFICE

JOHN A. WILSON, OF ELIZABETH, NEW JERSEY

LIQUID COATING COMPOSITION AND METHOD OF PREPARING THE SAME

No Drawing. Application filed December 28, 1929. Serial No. 417,264.

This invention relates to liquid coating compositions and more particularly to compositions of this character which contain a drying oil.

It has heretofore been proposed to employ thickened, "blown", or partially oxidized drying oils as ingredients of paints, varnishes and the like, and it has also been proposed to utilize certain drying oils such as China wood oil, polymerized and thickened by the application of heat.

As distinguished from partially oxidized or polymerized oils, I propose to use oils which have been completely oxidized to a substantially solid state, and to a condition in which they are no longer soluble in the ordinary solvents which are normally capable of dissolving the oils.

As is well known, the drying or hardening of films of oil paints and the like, as commonly employed, is due to the oxidation of the linseed or similar drying oil which they contain. This oxidation process, even where boiled oils, mixed with a drier, are used, requires considerable time, and it is usually a matter of days before such a film of oil paint completely loses its tackiness and dust catching properties. One of the objects of the present invention, therefore, is to provide an oil base coating composition which will dry or harden quickly. To this end I propose to utilize, as above stated, a completely oxidized oil, so that, when the coating is applied, there is no appreciable further oxidation of such oil, but the drying and hardening of the film takes place rapidly as a result of the evaporation of the solvents.

In carrying out the invention I may employ any of the well known drying oils, such for example as linseed oil, China wood oil, or the like.

According to one method I proceed as follows. I take a suitable quantity of completely oxidized oil in a substantially solid condition similar to that known as "skins", in which condition the oil is not soluble in any of the ordinary solvents such as turpentine, naphtha, xylol, etc. I add to this oil a suitable proportion of gum such as rosin, damar or the like. This mixture is then heated until the oil is completely dissolved in the melted gum, and I then dissolve this hot melted mixture in some suitable solvent such as xylol, toluol, etc. either with or without the addition of naphtha or turpentine. This solution, when cool, is then suitable for use as a base for making a primer, or for other purposes, and such a composition when applied to the surface to be coated will require for hardening only a length of time sufficient for the drying out of the solvent. When the solvent has evaporated a true oil base film remains.

I find in practice that the process of combining the oxidized oil with the gum and solvent can be facilitated by first reducing the oxidized oil to a state of fine subdivision as for example by passing it through a mill or chopper of the meat grinder type. When thus prepared, I find that good results can be obtained by the use of equal parts of the oxidized oil and rosin. When certain other gums are employed a somewhat larger proportion is required.

It will of course be understood that in the commercial preparation of my improved coating compositions, the properties of this base may be modified as required, by the addition of other materials such as gums, resins, oils and any desired pigments, the latter being preferably incorporated by grinding, and I find that the larger the proportion of oxidized oil and pigments, the greater the durability of the film.

According to another method, I find that oils oxidized to a point where they are not soluble in any of the ordinary solvents, may be dissolved, under the influence of heat, in certain fatty acids. Thus, completely oxidized linseed or China wood oil can be dissolved in linoleic acid at a temperature of about 600° F., and at atmospheric pressure. I further find that plain unoxidized linseed oil may be employed instead of linoleic acid, if the percentage of this acid present in this oil is sufficiently high.

The product resulting from the solution of completely oxidized oils in linoleic acid, or in oils containing this acid is of a somewhat thick and tacky nature. It may, however, be

readily cut or thinned to the desired consistency by means of any of the usual solvents such as solvent naphtha, turpentine, etc. and may have added to it any desired gum, resin, pigment or drier, to modify its properties as required. The material prepared in this way constitutes a highly useful liquid coating composition which can advantageously be employed as a base for primers, surfacers, varnishes and enamels.

It will, of course, be understood that when the composition contains unoxidized oil or linoleic acid, as above set forth, it does not dry as rapidly as the material first described, but the drying or complete oxidation of the film can be hastened by heating or baking the coated articles.

According to still another method of utilizing the completely oxidized oil, I first preferably chop it up by passing through a mill of the meat grinder type and then subject it to a prolonged grinding in a pebble or similar mill, in the presence of a suitable liquid vehicle, with or without the addition of a gum. As examples of liquid vehicles which may be thus employed I may mention benzol, toluol, xylol, solvent naphtha, petroleum naphtha, turpentine, etc., or mixtures of these, as well as such solvents as acetone, ethyl acetate, etc. It is possible that the mixture which results from the above mentioned grinding of the oil in the presence of these liquid vehicles is in the nature of a colloidal solution.

I find that it is possible to produce by this pebble mill method a mixture of the completely oxidized oil with a suitable vehicle such as turpentine, which mixture can, by properly proportioning the ingredients, be made to have a thick creamy consistency similar to that of the so-called "liquid wax" so largely used for rubbing and polishing wooden and other articles. Furthermore, while, when lacquer applied over an undercoat of ordinary wax will not dry properly, if at all, I find that my improved oil base product of waxy consistency has no effect on the lacquer. It will of course be understood that when preparing my improved waxy product, small quantities of gums or resins such as rosin, ester gum, damar, shellac or synthetic gums may be added, if desired, in order to insure against any possibility of tackiness. These may be dissolved in their respective solvents and then mixed with the oil base composition, or they may be introduced into the pebble mill along with the oxidized oils and ground together. Furthermore, suitable quantities of pigments may be added to the batch of material in the pebble mill if desired to produce a colored product. It will be noted that this grinding process of incorporating completely oxidized oils with a liquid vehicle is a cold process, requiring no heat.

What I claim is:

1. A liquid coating composition comprising a drying oil completely oxidized to a dry substantially solid state, combined with a gum of the group consisting of rosin and damar to form a true solution, and further dissolved in a suitable volatile solvent.

2. A liquid coating composition comprising a drying oil completely oxidized to a point where it is no longer soluble in any solvent normally capable of dissolving the oil, an organic acid material of the group consisting of abietic and linoleic acids, and a volatile solvent.

3. The method of preparing a coating composition which comprises completely oxidizing a drying oil to a condition in which it is no longer soluble in the ordinary solvents capable of dissolving the oil, and then combining said oxidized oil under the influence of heat with a soluble gum of the group consisting of rosin and damar, and adding one of such solvents to the mixture.

4. The method of preparing a liquid coating composition which comprises completely oxidizing a drying oil to a condition in which it is no longer soluble in the ordinary solvents capable of dissolving the oil, combining said oxidized oil by heating with an organic acid material of the group consisting of abietic and linoleic acid, and then dissolving the combination in one of said solvents.

5. The method of bringing into solution a drying oil oxidized to a condition in which it is no longer soluble in the ordinary solvents, which method comprises mixing with such oxidized oil a gum of the group consisting of rosin and damar, heating the mixture above the melting point of such gum, and then dissolving the melted mixture in one of said solvents.

6. The method of manufacturing a liquid coating composition which comprises completely oxidizing a drying oil to a substantially solid state, bringing such oil into solution by heating with a gum, of the group consisting of rosin and damar and adding a liquid solvent vehicle, and then incorporating a pigment in such solution by grinding it therewith.

In testimony whereof I affix my signature.

JOHN A. WILSON.