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PRESERVATIVE FOR GLUE AND THE LIKE

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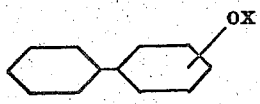
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12 Claims. (Cl. 87—17)

The present invention is concerned with vegetable and animal glues and gelatinous materials generally, particularly with the preservation of such materials.

In the manufacture of the aforementioned products, the tendency to decomposition thereof because of growths such as bacteria and molds is well known. Consequently, various preservatives or antiseptics have been proposed for use in inhibiting and controlling bacterial and mold growth therein. For preserving glue, mucilage, starch paste, molding and printing jellies, etc., or aqueous solutions thereof, both in preparation and application, formaldehyde and mercuric chloride have been used. The materials thus treated generally tend to become insoluble. Borax and boric acid, which are milder antiseptics, have been tried, but affect adversely the tests of the glue. Phenol (C_6H_5OH) has been used in glue stocks and liquors, but the phenolic odor has been found very objectionable. In fact, practically all of the preservatives and antiseptics used heretofore cause coagulation or peptization of the glue material, or affect the glue in some other undesirable manner.

We have now found that materials of the above class can be preserved from decomposition caused by putrefaction, mildew, or equivalent action, by incorporating in such material a relatively small amount of a phenylphenol, or salt thereof, having the following general formula;



wherein X represents a univalent substituent such as hydrogen, or a metal, e. g. copper, or an alkali metal and wherein the oxy-group is in either the ortho or para position.

Our invention, then, is characterized by the features hereinafter fully described and particularly pointed out in the claims, the following description setting forth in detail approved combinations of ingredients embodying the invention, such disclosed combinations constituting, however, but several of the various ways in which the principle of our invention may be used.

Our new preservatives, particularly the water-soluble salts of ortho- and para-phenylphenol, are readily soluble in an aqueous solution of practically all of the materials hereinbefore enumerated with which our invention is concerned. These preservatives are also especially advantageous to use because of their high bactericidal activity, their substantially non-odoriferous character and the relative freedom thereof from coagulating or liquefying action on the glue or other materials treated. Phenol, or the salts thereof such as sodium phenate, etc., in contrast to our preservatives, have lower bactericidal coefficients, impart the undesirable phenolic odor to the product treated therewith and are known to coagulate and otherwise affect unfavorably the glues or other substance in question with which they are used.

For example, an aqueous animal glue may be preserved by adding thereto ortho-phenylphenol or the sodium salt thereof in amount equal to from approximately $\frac{1}{10}$ to 5 per cent of the dry weight of such glue. We have compared, for instance, animal glue (1) untreated, (2) treated with ortho-phenylphenol and (3) treated with sodium ortho-phenylphenate. The untreated glue (1) developed mold growth in from 36 hours to 11 days. Samples of the glue treated with 2 per cent of the ortho-phenylphenol (2) and the sodium salt (3) were still entirely free from mold at the end of a month. The herein described preservatives had practically no weakening effect on the tensile strength of glued wooden joints prepared from the treated glues.

When incorporated with starch paste, gelatin or products made therefrom, such as printing jellies, etc., quantities of our preservative equal to that given in the above example were found sufficient to prevent mold growth. In carrying out these tests varying quantities of preservative were employed depending somewhat upon the conditions of temperature and of moisture, purity, etc., of the material to be preserved. Preferably, a test is made to determine the minimum requirement of preservative needed for a given condition. For instance, to preserve an unpurified gelatin in a warm atmosphere as much as 3 per cent of the sodium salt may be required, while to preserve starch paste and other adhesives of that type 1 per cent, or less, of the sodium salt was usually found to suffice.

We may also incorporate our preservative with inert materials such as starches, etc., and make up the same into capsules, cubes, or other shapes suitable for dispensing.

In brief, our invention resides in a new composition of matter comprising an animal or vegetable glue, paste or similar gelatinous material suitable for adhesives, jellies, etc., which are

susceptible to bacterial and mold growth in the presence of air or moisture or both, or under other conditions favorable thereto, together with a preservative therefor, such preservative consisting of a phenyl phenol or water-soluble salt thereof.

Other modes of applying the principle of our invention may be employed as regards the ingredients or details herein disclosed, provided those stated by any of the following claims or the equivalent thereof be employed.

We therefore particularly point out and distinctly claim as our invention:—

1. As a new composition of matter, a glue containing a relatively small quantity of ortho-phenylphenol.

2. As a new composition of matter, a glue containing a relatively small quantity of a salt of ortho-phenylphenol.

3. As a new composition of matter, a glue containing a relatively small quantity of sodium ortho-phenylphenate.

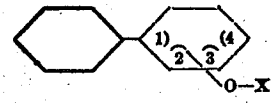
4. As a new composition of matter, an animal glue containing sodium ortho-phenylphenate in amount equal to approximately $\frac{1}{10}$ per cent to approximately 5 per cent of the dry weight of such glue.

5. An animal glue containing a relatively small amount of ortho-phenylphenol.

6. An animal glue containing a relatively small amount of a soluble salt of ortho-phenylphenol.

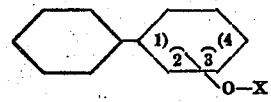
7. An animal glue containing a relatively small amount of sodium ortho-phenylphenate.

8. As a new composition of matter, a glue containing a relatively small quantity of a phenylphenolic compound having the following general formula



wherein X represents hydrogen or a metal and wherein the oxy-group is in the position 2 or 4 with regard to the diphenyl linkage.

9. The method of preserving glue and gelatinous materials, which comprises incorporating therewith a relatively small quantity of a phenylphenolic compound, having the general formula



wherein X represents hydrogen or a metal and wherein the oxy-group is in the position 2 or 4 with regard to the diphenyl linkage.

10. The method of preserving glue and gelatinous materials, which comprises incorporating therewith a relatively small quantity of ortho-phenylphenol.

11. The method of preserving glue and gelatinous materials, which comprises incorporating therewith a relatively small quantity of a salt of ortho-phenylphenol.

12. The method of preserving glue and gelatinous materials, which comprises incorporating therewith a relatively small quantity of sodium ortho-phenylphenate.

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