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COATED WIRE CLOTH

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This invention relates to the preparation of wire cloths or screens which are coated with transparent or translucent coatings that close the meshes thereof, and relates more particularly to the imparting of non-inflammable or flame-proofness to such coated wire cloth.

An object of my invention is to prepare un-inflammable or substantially non-combustible coated wire cloth that may be used for many purposes including many for which the ordinary inflammable coated wire cloths are not suitable. Other objects of my invention will appear from the following detailed description.

There is now on the market wire cloth which is coated with transparent layers of cellulose derivatives, particularly cellulose acetate, and this is used for the making of windows or transparent walls of poultry houses. However, such coated wire cloth has the great disadvantage of being very combustible. If such wire cloth, whose meshes are filled for instance with a layer of cellulose acetate and triphenyl phosphate which of itself is not combustible, is ignited at the lower end, the thin metallic wires glow, the glowing metal ignites the transparent film, and there soon results a very sooty flame which is transmitted from below to above, so that in short time the wire cloth coating is destroyed by the flames.

These defects, which naturally prevent an extensive use of wire cloth coated with cellulose derivative films in the interior buildings, heretofore could not be removed, even if there were incorporated in the cellulose derivative plastics unusually large amounts of camphor substitutes known to reduce inflammability, especially the boric acid esters, the phosphoric acid esters, halogen containing organic products and others. While for example amounts of triphenyl phosphate as low as 10 to 15% of the weight of the cellulose acetate are sufficient to impart non-inflammability or non-combustibility to a layer of cellulose acetate alone or to a layer of a mixture of cellulose acetate and about 20% of a combustible plasticizing agent, ten times this amount of triphenyl phosphate is not sufficient to render such a film non-inflammable when it is coated onto wire cloth.

I have now made the surprising discovery that fully unburnable or flame-proof wire cloth can be prepared if there are employed besides the above named phosphoric acid esters, still larger amounts, and preferably above 50% (based on the weight of the cellulose derivative), of halogenated substances, as for example tribrom resorcinol, tetrachlorhydroquinone, tribromhydrin,

etc. as plasticizing agents for the cellulose acetate or other cellulose derivative. In many cases it is sufficient to use these highly halogenated compounds alone, but in that case amounts of 50% to about 150% are necessary, whereby translucent or cloudy layers are mainly produced. I have found that materials particularly useful for this purpose are the plasticizing agents which contain both halogen groups and phosphoric acid esters, as for example, halogenated tricresyl phosphate or triphenyl phosphate, such as tri-parachlorophenyl phosphate, chlorbromcresyl phosphate, tribrommethyl phosphate, trichlorobutyl phosphate, etc. These substances with two active components display a disproportionately greater effect than the above named products and can be used either alone or in admixture with the same, whereby the proportion is governed particularly in accordance with the more or less high retentive power of the particular cellulose derivative employed so as to avoid the crystallization or sweating out of the added agents.

Coated wire cloth prepared in accordance with this invention can be employed not only in the same manner as the prior combustible materials for windows or outer walls, but they may also be used for various other purposes such as for wall covers, inter-walls, doors, closets, partitions, protective walls and the like in the interior of buildings. On account of this, it is not always necessary, in fact frequently not even desirable, that these be transparent as glass, since in many cases mixtures may be added, which produce only translucent or whitish layers, or even opaque filling materials or pigments may be added to the film-forming material.

The above described coated wire cloth can be prepared in any desired manner by dipping the wire cloth into or by coating the same with a solution of the layer forming material or by laminating the wire cloth with finished layers or films of the material or in other ways.

While this invention is particularly applicable to the preparation of wire cloth whose meshes are filled with plastics containing cellulose acetate, the cellulose acetate may be replaced in whole or in part by other organic derivatives of cellulose, such as cellulose formate, cellulose propionate, cellulose butyrate, methyl cellulose, ethyl cellulose or benzyl cellulose.

Instead of cellulose derivatives there may be used similar acting materials, particularly synthetic resins, condensation products of phenol, urea, albumin, etc. with formaldehyde, polymer-

ized vinyl compounds and other transparent film-forming bodies.

The foregoing detailed description is given merely by way of illustration and many variations may be made therein without departing from the spirit of my invention.

Having described my invention, what I desire to secure by Letters Patent is:

1. A composition of matter containing organic derivatives of cellulose and at least one halogenated aliphatic phosphoric ester selected from the group consisting of tribromomethyl phosphate trichlorobutyl phosphate.

2. A composition of matter containing organic esters of cellulose and at least one halogenated aliphatic phosphoric ester selected from the group consisting of tribromomethyl phosphate and trichlorobutyl phosphate.

3. A composition of matter containing cellulose acetate and at least one halogenated aliphatic phosphoric ester selected from the group consisting of tribromomethyl phosphate and trichlorobutyl phosphate.

4. A composition of matter containing organic derivatives of cellulose and tribromomethyl phosphate.

5. A composition of matter containing cellulose acetate and tribromomethyl phosphate.

6. A composition of matter containing organic derivatives of cellulose and trichlorobutyl phosphate.

7. A composition of matter containing cellulose acetate and trichlorobutyl phosphate.

8. Flame-proof coated metal wire cloth having the meshes thereof closed with a film-like layer of a composition comprising a suitable organic base and a relatively large amount of a halogenated aliphatic phosphoric ester selected from the group consisting of tribromomethyl phosphate and trichlorobutyl phosphate as plasticizer for the organic base, whereby the inflammability or combustibility of the layer forming material, which is increased by contact with the metal wire, is substantially eliminated.

9. Flame-proof coated metal wire cloth having the meshes thereof closed with a film-like layer of a composition comprising an organic derivative of cellulose and a relatively large amount of halogenated aliphatic phosphoric ester selected from the group consisting of tribromomethyl phosphate and trichlorobutyl phosphate as plasticizer for the organic derivative of cellulose, whereby the inflammability or combustibility of the layer forming material, which is increased by contact with the metal wire, is substantially eliminated.

10. Flame-proof coated metal wire cloth having the meshes thereof closed with a film-like layer

of a composition comprising cellulose acetate and a relatively large amount of a halogenated aliphatic phosphoric ester selected from the group consisting of tribromomethyl phosphate and trichlorobutyl phosphate as plasticizer for the cellulose acetate, whereby the inflammability or combustibility of the layer forming material, which is increased by contact with the metal wire, is substantially eliminated.

11. Flame-proof coated metal wire cloth having the meshes thereof closed with a film-like layer of a composition comprising a synthetic resin and a relatively large amount of a halogenated aliphatic phosphoric ester selected from the group consisting of tribromomethyl phosphate and trichlorobutyl phosphate as plasticizer for the synthetic resin, whereby the inflammability or combustibility of the layer forming material, which is increased by contact with the metal wire, is substantially eliminated.

12. Flame-proof coated metal wire cloth having the meshes thereof closed with a film-like layer of a composition comprising an organic derivative of cellulose and a relatively large amount of tribromomethyl phosphate as plasticizer for the organic derivative of cellulose, whereby the inflammability or combustibility of the layer forming material, which is increased by contact with the metal wire, is substantially eliminated.

13. Flame-proof coated metal wire cloth having the meshes thereof closed with a film-like layer of a composition comprising cellulose acetate and a relatively large amount of tribromomethyl phosphate as plasticizer for the cellulose acetate, whereby the inflammability or combustibility of the layer forming material, which is increased by contact with the metal wire, is substantially eliminated.

14. Flame-proof coated metal wire cloth having the meshes thereof closed with a film-like layer of a composition comprising an organic derivative of cellulose and a relatively large amount of trichlorobutyl phosphate as plasticizer for the organic derivative of cellulose, whereby the inflammability or combustibility of the layer forming material, which is increased by contact with the metal wire, is substantially eliminated.

15. Flame-proof coated metal wire cloth having the meshes thereof closed with a film-like layer of a composition comprising cellulose acetate and a relatively large amount of trichlorobutyl phosphate as plasticizer for the cellulose acetate, whereby the inflammability or combustibility of the layer forming material, which is increased by contact with the metal wire, is substantially eliminated.

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