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STRAW PRODUCT AND TREATMENT THEREOF

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This invention relates to the modification in appearance of straws or products thereof and especially to straws and products thereof consisting partially or wholly of derivatives of cellulose.

An object of the invention is the economical and expeditious modification of the surface of straws or products thereof thus modifying the appearance.

Another object of the invention is the modification of the surface of straws or products thereof thus forming a new appearance which is permanent and does not become dull or peel off upon use of the straws or products thereof. Other objects of the invention will appear from the following detailed description.

Millinery and other articles subjected to bending and wearing stresses and treated according to my invention do not become dull on wearing due to cracking and peeling off of the lacquer finish. The lacquer or finish here described becomes an integral part of the article and the article maintains its finished original appearance permanently without showing ageing or wearing stress effects.

By the use of my invention many novel effects can be imparted to articles formed of derivatives of cellulose. Bright or dull finishes may be given to the articles or the articles may be so treated that a bloom is developed on the surface. Permanent coloring and effect materials may be used such that the articles are altered on their surface in respect to finish, color and texture appearance all of which effects are permanent and substantially unmodified by wear.

In accordance with my invention I treat artificial straws or articles made therefrom with a lacquer like substance containing solvents for the straw material, thus dissolving the surface of the straw material temporarily and placing therein, permanently, the effect materials of the lacquer like substance.

My invention is applicable to any suitable form of filament or article made therefrom. It is particularly applicable, however, to filaments of a high denier or to articles made at least in part of such heavy filaments. Thus assemblies of fine filaments of about 75 denier may be spun and a plurality of these may be coalesced to form straw like filaments by the use of solvents and/or heat and pressure. The straw like filaments may be cylindrical or flat and may be formed by other means than above as cutting of thin bands from sheets or foils, extruding, from solution by wet or dry methods, through a rectangular or round orifice of the desired size, or by any other method. The invention is of particular importance in connection with the so-called straw filaments or artificial hair filaments which are from 500 to 3000 denier or above and the articles made therefrom.

The straws may be treated as such or they may be first formed into an article and the surface of the article treated. The straws may be formed into braids, straps, ribbons or other continuous forms and these may be formed before or after treatment by my invention into articles by further braiding, weaving or sewing. Further the straws may be directly formed into an article by weaving, circular knitting, warp knitting, braiding or netting either alone or along with other types and kinds of filaments, threads, yarns, etc., either before or after being lacquered according to my invention.

The material of the filaments may be of any suitable derivative of cellulose or a derivative of cellulose containing other materials such as cotton, wool or other threads incorporated with the cellulose derivative by means of solvents or swelling agents and/or heat and pressure. For example, yarns or threads may be incorporated in a straw while coalescing a plurality of fine filaments to form said straw. The invention is particularly applicable to organic derivatives of cellulose such as organic esters of cellulose and cellulose ethers. Examples of organic esters of cellulose are cellulose acetate, cellulose formate, cellulose propionate and cellulose butyrate, while examples of cellulose ethers are ethyl cellulose, methyl cellulose and benzyl cellulose.

The straws or articles made therefrom may contain, before treatment according to my invention effect materials such as resins, waxes, and wax like bodies as plasticizers and/or effect materials such as pigments, filling materials, dyes and lakes also fire retardants such as beta chlornaphthalene.

According to my invention any suitable filament, straw or article made therefrom that is derived or made from cellulose, is treated with a lacquer like material. The lacquer like material contains solvents for the particular cellulose or cellulosic derivative which forms the base of the filaments or straws. The lacquer may contain either the same cellulose or cellulosic derivative as used to form the particular straw to be worked upon or it may contain other cellulose esters or ethers, provided the cellulosic constituents of the lacquer are compatible with the cellulosic constituent of the straw. There may

be incorporated in the lacquer precipitating agents an example of which is kerosene when working with a cellulose acetate lacquer. There may also be incorporated in the lacquer finely divided metal such as aluminum, copper, etc. to obtain metallic effects. Likewise, I may incorporate pigments such as antimony trioxide, stannic oxide, basic lead carbonate, titanium dioxide, dibenzoyl benzidine, diaceto benzidine, etc. to produce dulling effects.

The solvent or solvents of the lacquer is to be a solvent or swelling agent for the material worked upon and a solvent for the cellulosic constituent of the lacquer but where two or more solvents are used they need not have similar affinity for the material or similar boiling points. Thus a bright finish may be imparted to straws comprising an organic derivative of cellulose by treating same with a lacquer having a major solvent of low boiling point and a small percentage of a high boiling solvent thereby causing slow drying combined with complete penetration of the lacquer into the straw producing in the absence of dulling materials a bright straw of glazed appearance. Also by using a highly volatile solvent dulling effects may be produced.

The particular solvent and resin-like constituents of the lacquer are chosen such that the resin-like constituents are compatible with the cellulose material of the article or straw to be treated and such that the solvents are solvents or swelling agents for the cellulosic materials of the article or straw and solvents for the resin-like materials of the lacquer. Examples of resins which are compatible with organic derivatives of cellulose are phenol-aldehyde resins prepared in presence of an acid catalyst, acetone-diphenyol propane resins, cresol-acetone resins, vinylphenol resins, toluene, sulphonamid-aldehyde resins, naphthalene sulfonamid-formaldehyde resins, acetin resins of glycerol abietate, etc. Examples of solvents are acetone, ethyl oxybutyrate, monacetin, dimethylene ethers, formals of hydroxy carboxylic acids, alkylated cyclo-tetramethylene dioxide, etc.

I have found that many novel effects may be produced in the straws or articles made therefrom by incorporating a precipitant for and an organic derivative of cellulose in the lacquer. Thus kerosene and cellulose acetate or propionate may be employed in the same lacquer. In this case, the surface so treated dries with a bloom or dullness due to the precipitation of the cellulose acetate or propionate from solution at the surface of the straw by the kerosene. Any amount of precipitant and any precipitant may be employed provided the cellulose derivative in the lacquer reaches the straw in a dissolved state and then precipitates after it has entered the straw and become a part thereof. As an example a lacquer of 15% acetone soluble cellulose acetate 5% effect materials and 80% solvent of 89% acetone 1% water and 10% kerosene may be used. In place of kerosene the precipitant may consist of ether, benzol, zylene, etc.

The lacquers may be applied to the straws or articles made therefrom in any desired manner. I may apply these lacquers by dipping the straw or articles in a bath of same, which must be quick however to avoid complete dissolving of the straw, or by brushing or spraying. The lacquers may be applied unevenly or in the form of a definite design by brushing or spraying over stencils. The lacquer may also be applied by printing and embossing devices which may operate continuously or with a step by step motion.

In accordance with my invention the lacquer finish is a part of the straw and the bending back and forth of the straw in future processing or wearing therefor does not cause it to dull, crack or peel.

It is to be understood that the foregoing detailed description is merely given by way of illustration and many alterations 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. In a process for the production of bloom effects on artificial straw containing derivatives of cellulose selected from the group consisting of organic acid esters of cellulose and cellulose ethers, the step which comprises applying to at least part of the surface of the straw, a coating composition comprising approximately 72% of a solvent for the derivative of cellulose, 15% of a derivative of cellulose selected from the group consisting of organic acid esters of cellulose and cellulose ethers and 8% of an organic precipitant for the derivative of cellulose in the composition; said coating composition temporarily dissolving the surface of the straw to permanently anchor therein the derivative of cellulose precipitated from said composition by the organic precipitant.

2. A process for the production of bloom effects on artificial straw containing cellulose acetate, which comprises temporarily dissolving at least part of the surface of the straw and permanently anchoring therein precipitated derivatives of cellulose selected from the group consisting of organic acid esters of cellulose and cellulose ethers, by applying to the surface of the straw a composition comprising approximately 15% of a derivative of cellulose selected from the group consisting of organic acid esters of cellulose and cellulose ethers, 72% of a solvent for the cellulose acetate and for the derivative of cellulose contained in said composition and 8% of a precipitant for the derivative of cellulose of the composition.

3. In a process for the production of bloom effects on artificial straw containing derivatives of cellulose selected from the group consisting of organic acid esters of cellulose and cellulose ethers, the step which comprises applying to at least part of the surface of the straw a coating composition comprising approximately 72% of a solvent for the derivative of cellulose, 15% of an organic derivative of cellulose selected from the group consisting of organic acid esters of cellulose and cellulose ethers and 8% of an organic precipitant for the organic derivative of cellulose, selected from the group consisting of kerosene, ether, xylene and benzol, said coating composition temporarily dissolving the surface of the straw to permanently anchor therein the organic derivative of cellulose precipitated from said composition by the organic precipitant.

4. A process for the production of bloom effects on artificial straw containing cellulose acetate, which comprises temporarily dissolving at least part of the surface of the straw and permanently anchoring therein precipitated derivatives of cellulose selected from the group consisting of organic acid esters of cellulose and cellulose ethers, by applying to the surface of the straw a composition comprising approximately 15% of a derivative of cellulose, 72% of a solvent for the cellulose acetate and for the derivative of cellu-

lose contained in said composition and 8% of a precipitant for the derivative of cellulose of the composition, selected from the group consisting of kerosene, ether, xylene and benzol.

5. In a process for the production of bloom effects on artificial straw containing derivatives of cellulose selected from the group consisting of organic acid esters of cellulose and cellulose ethers, the step which comprises applying to at least part of the surface of the straw a coating composition comprising approximately 72% of a solvent for the derivative of cellulose, 15% of cellulose acetate, and 8% of kerosene, said coating composition temporarily dissolving the surface of the straw to permanently anchor therein the cellulose acetate precipitated from said composition by the kerosene.

6. In a process for the production of bloom effects on artificial straw containing cellulose acetate, the step which comprises applying to at least part of the surface of the straw a coating composition comprising approximately 71% of a solvent for the cellulose acetate, 15% of cellulose acetate, 1% water, 5% of effect materials and 8% of kerosene, said coating composition temporarily dissolving the surface of the straw to permanently anchor therein the cellulose acetate precipitated from said composition by the kerosene.

7. In a process for the production of bloom effects on artificial straw containing derivatives of cellulose selected from the group consisting of organic acid esters of cellulose and cellulose ethers, the step which comprises applying to at least part of the surface of the straw a coating composition comprising 72% of a solvent for the derivative of cellulose, 15% cellulose acetate, and 8% of ether, said coating composition temporarily dissolving the surface of the straw to permanently anchor therein the cellulose acetate precipitated from said composition by the ether.

8. In a process for the production of bloom effects on artificial straw containing cellulose acetate, the step which comprises applying to at least part of the surface of the straw a coating composition comprising approximately 71% of a solvent for the cellulose acetate, 15% cellulose acetate, 1% water, 5% effect materials and 8% of ether, said coating composition temporarily dissolving the surface of the straw to permanently anchor therein the cellulose acetate precipitated from said composition by the ether.

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