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CELLULOSIC STRUCTURE

Thomas F. Banigan, Kenmore, N. Y., assignor to
E. I. du Pont de Nemours & Company, Wilming-
ton, Del., a corporation of Delaware

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This invention relates to the production of a non-fibrous, cellulosic film or pellicle of a novel and decorative appearance. More particularly, the invention relates to such film in the form of hollow articles, adapted for instance to be shrunk into place over the mouths of bottles by the loss of their contained water. The invention will be described in terms of hollow articles, conventionally known as caps and bands, formed of cellulose regenerated from viscose.

Caps and bands may be made from a viscose solution by immersing an appropriately shaped mandrel into a viscose solution and, after withdrawing the mandrel, coagulating the viscose solution adhering thereto, and stripping the coagulated pellicle from said mandrel. Alternatively, a viscose solution may be extruded through an annular orifice into a coagulating and/or regenerating bath and subsequently purified. Wet or gel regenerated cellulose shrinks when it is dried. This property has been taken advantage of in the caps and bands industry where gel or wet regenerated cellulose caps or bands are applied, for instance, over cork and neck of a bottle. As the caps dry, they shrink and grip the neck of the bottle, forming an attractive, tightly fitting seal.

Heretofore, it has been customary to incorporate various opaquing agents such as mica, titanium oxide, high molecular weight organic delustrants and the like in pellicles such as bottle caps and bands for the purpose of hiding the unsightly appearance of the bottle neck or primary closure of the bottle, or for the purpose of presenting a satisfactory base for printed indicia to be placed on the caps or bands. Opaquing agents used heretofore in pellicles were of necessity ground to a very fine powder which when incorporated in the pellicles produced an even, plain, homogeneous opaque appearance.

It is an object of this invention to produce a non-fibrous, cellulosic film or pellicular sleeve of novel and improved appearance.

It is another object of this invention to produce a non-fibrous, cellulosic film or pellicular sleeve which contains a relatively small percentage of a soft, yieldable material ground to such a size as to render the pellicle substantially opaque and which will impart a novel appearance thereto.

Other objects will appear hereinafter.

The objects of this invention may be accomplished, for example, by adding to a film-forming solution, such as viscose, a suitable quantity of graphite.

In accordance with this invention, it has been found that viscose to which a relatively small quantity of graphite has been added will, when cast into the form of a cap, band, pellicle, film or the like, produce a chatoyant or lustrous metallic effect, having an attractive appearance and lending a suitable background for printing. The entire surface of the cap or band may exhibit this improved appearance in either a dull or glossy form. A pellicle containing graphite on the outer surface thereof or a pellicle in which graphite is incorporated within the portion constituting the outer surface thereof will exhibit a dull appearance. A band having a glossy appearance may be produced by extruding two separate viscoses through a concentrically divided, annular orifice, the inner viscose containing graphite and the outer viscose being transparent. Alternatively, striped or mottled effects may be secured. For example, a band having a striped appearance may be produced by extruding separate viscoses having two or more different optical appearances, (at least one of the viscoses having graphite admixed therewith) through an annular orifice arcuately divided into two or more compartments. In this manner, bands may be produced having alternately arranged thereabout, transparent sections and sections having a novel opaque appearance, or sections having a novel opaque appearance of different colors.

Other substances, such as dyes, may also be added to the viscose or other film-forming material as desired. The pellicle may or may not be subsequently dyed after coagulation and regeneration.

The amount of graphite necessary to employ in accordance with this invention is comparatively small. Very satisfactory articles are produced, for example, with only 5% to 10% graphite, based on the weight of the cellulose in the cellulosic composition, although it is to be understood that larger or small quantities may be equally well used.

The graphite used in accordance with the present invention is preferably natural graphite in flake form. The graphite is preferably ground, for example, by means of a pebble mill, to an average particle size of 50 to 150 microns in diameter. In order to obtain the highly desirable novel chatoyant or lustrous metallic appearance in the finished pellicle, the average size of the graphite particles should be greater than 15 microns in diameter and preferably greater than 25 microns in diameter.

While the invention has been described with

specific reference to the production of regenerated cellulose pellicles, it may equally well be applied to other non-fibrous films in which the graphite may be added to the film-forming solution. Ex-
5 am- ples of such materials are cellulose esters, such as cellulose acetate; cellulose ethers, such as lowly etherified methyl, ethyl or glycol cellulose; gelatin, casein and the like.

Many obvious changes and modifications can be made in the above described processes and prod-
10 ucts without departing from the nature and spirit of the invention. It is therefore to be understood that the invention is not to be limited in scope except as set forth in the appended claims.

15 I claim:

1. As a new article of manufacture, a shrink-
able film or pellicle composed of a non-fibrous,
cellulosic material and finely divided natural,
flake graphite having an average particle size be-
20 tween 15 and 150 microns in diameter.

2. As a new article of manufacture, a shrink-
able film or pellicle composed of a non-fibrous,
cellulosic material and finely divided natural,
flake graphite, the average graphite particle hav-
ing a diameter of 50 to 150 microns. 5

3. As a new article of manufacture, a shrink-
able film or pellicle composed of a non-fibrous,
cellulosic material and 5% to 10% (based on the
weight of the cellulose in the material) of finely
divided natural, flake graphite having a particle 10
size between 15 and 150 microns in diameter.

4. As a new article of manufacture, a shrink-
able film or pellicle composed of a non-fibrous,
cellulosic material and 5% to 10% (based on the
weight of the cellulose in the material) of finely 15
divided natural, flake graphite, the average
graphite particle having a diameter of 50 to 150
microns.

THOMAS F. BANIGAN. 20