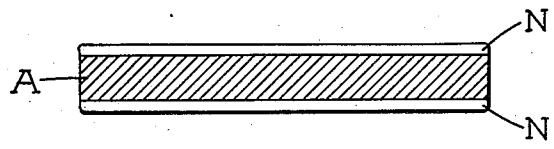
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TREATING PHOTOGRAPHIC FILM

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TREATING PHOTOGRAPHIC FILM

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1 Claim. (Cl. 91—69)

This invention relates to the art of making photographic film base, and particularly to making film resistant to deformation or wrinkling.

Films of cellulosic material, such as cellulose ester films, used in the manufacture of photographic materials, are hygroscopic and expand when wet, particularly when being treated. When dried after usual processing, they do not uniformly assume their original smooth state but have a tendency to retain areas presenting an irregular or wrinkled surface that is obviously objectionable. This is referred to herein as the tendency to "cockle". Films of cellulose acetate possess this tendency to an undesirable extent. The tendency to expand when wet is materially reduced by adding softeners such as dibutyl phthalate, triphenyl phosphate, and such substances that are inherently water repellent, but in spite of this treatment, commercial film base approximately five to seven and one-half thousandths of an inch thick still remains unable to resist the tendency to cockle.

This invention aims to provide a novel method of making film cockle-proof. Another object of my invention is to provide a novel method of treating a moisture resistant cellulose acetate film so that it will remain in its original unwrinkled state after being subjected to the various processes required in its subsequent manufacture and commercial use. A further object is to accomplish these ends without materially diminishing any fire resistant properties of the film base used. Additional and more specific objects will more clearly appear from the detailed description herein presented.

In the accompanying drawing, the figure diagrammatically illustrates an enlarged cross-sectional view of a cockle-proofed film comprising a base of a fire resistant material, "A", bearing on both sides thereof a cellulose nitrate coating "N".

To enable those skilled in the art to use my invention I will as an illustration describe a preferred method of carrying it into effect, with the understanding that modifications may be made and the invention embodied in different forms without departing from its spirit and scope in its broader aspects.

Inasmuch as the above mentioned tendency to wrinkle or cockle is much less noticeable in nitrate film than in acetate film, my improved method is therefore preferably applicable to fire resistant cellulose acetate film or the like manufactured either with or without the incorporation of the above mentioned softening agents.

I first take a film base preferably of cellulose acetate and preferably containing softening and water-repelling agents, such as dibutyl phthalate or triphenyl phosphate. To both sides of this film base I apply a nitrocellulose solution prepared and applied as described herein. While this solution contains nitrocellulose as indicated, it does not contain a sufficient amount of any ingredients to materially diminish the fire resisting properties of the finished film coated with my solution.

This solution may be applied by any well known apparatus, preferably immediately after the film base has been manufactured or cast, but care must be taken to make sure that the film base is thoroughly dried after it leaves the casting unit. My novel solution is, of course, applied to the film base prior to the application of any of the light sensitive emulsion coatings.

Only enough of my solution is applied to each side of the film base so that the coating resulting therefrom will when finally dried thereon have a total thickness preferably not greater than $\frac{1}{10}$ the thickness of the film base used. Film base for motion picture use or for studio portrait use is made in thicknesses ranging from approximately five to seven and one-half thousandths of an inch. Therefore, such base when bearing on both sides thereof the herein described coating will have its total thickness increased not more than 10%. I have found that this closely limits the nitrocellulose solution so that it will not materially diminish the combustion retarding properties of the fire resistant film base used, or of the thus coated and finished cockle-proof film.

A preferred and novel nitrocellulose solution comprises the following:

	By weight
Nitrocellulose	5.5
Ethyl alcohol (incorporated in the nitrocellulose)	2.00
Camphor	0.55
Acetone	10.00
Butyl alcohol	10.00
Mono ethylether ethylene glycol	10.00
Methanol (methyl alcohol)	61.45
Castor oil	0.50

Here the nitrocellulose furnishes the necessary body. Camphor and castor oil or the like can be used to add flexibility to the final product. Castor oil or the like while not essential herein may also supply water-resisting qualities. Mono ethylether ethylene glycol or the like

serves as an anti-clouding agent to prevent the water precipitation of the nitrocellulose during the final stages of drying. Methanol or the like is used as a solvent for the cellulose nitrate that will not affect the cellulose acetate. Acetone or the like is preferred herein as an anchorage agent that will act upon the cellulose acetate. Butyl alcohol or the like acts as a preferred residual solvent. Ethyl alcohol is incorporated in commercial nitrocellulose and is incidental thereto. It is not essential herein.

What I claim as new and desire to secure by Letters Patent is:

The method of cockle-proofing photographic film of cellulose acetate containing moisture repelling agents so that the combustion retarding properties of said film will not be materially diminished by said method, comprising thoroughly and carefully drying the film, and subsequently applying to both sides thereof a relatively thin coating resulting from a solution containing by weight not more than 10% nitrocellulose, approximately 1% camphor, approximately 10% each of acetone, butyl alcohol, and mono ethylether ethylene glycol, and approximately 60% methyl alcohol, and subsequently re-drying the thus coated film.

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