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NONHALATION BACKING FOR PHOTOGRAPHIC FILM

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Fig. 1.

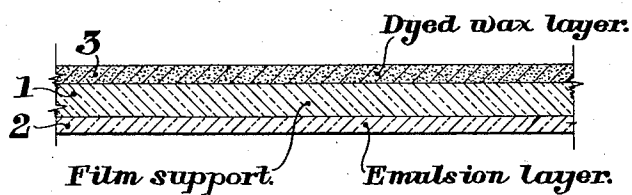
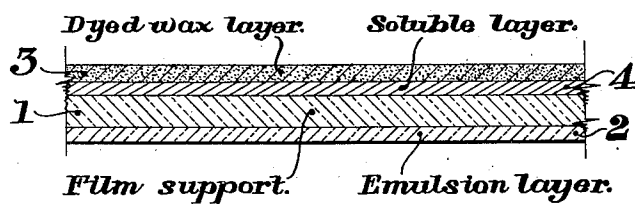


Fig. 2.



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NONHALATION BACKING FOR PHOTOGRAPHIC FILM

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3 Claims. (Cl. 95-9)

This invention relates to a photographic film bearing a backing or coating to prevent halation, the backing being removable or not during the processing of the film, as desired.

Many different types of backings have been proposed for preventing halation in plates and film, some of these consisting of one coating and a number of two coatings, one applied over the other. These coatings usually contain a dye which absorbs actinic light, that is, the rays to which the film is sensitive. The backing which I now propose is of this same general character, but is made in a different way and with a different medium.

Reference is made to the drawing in which:

Fig. 1 is a cross-sectional enlarged view of one embodiment of the invention and

Fig. 2 is a cross-sectional enlarged view showing another embodiment.

In this invention I employ a layer of wax containing a dye, and I may apply this colored wax layer directly to the film support or use an undercoating which is soluble in the developing baths and place over this the colored wax layer. The latter method is preferable as it is usually desirable to remove the colored layer without any extra step during the processing so that it will not interfere with printing or viewing the film. A wax layer applied directly to the film support, however, has also certain advantages.

In carrying out my invention I make a solution containing a wax and dye, using a common or well known wax such as Carnauba or tri-chlor-naphthalene which is a well known commercial wax. The following are typical formulas which are suitable.

Formula I

Carnauba wax	5 grams
Carbon tetrachloride	3500 c. c.
Oil black B	70 grams

Formula II

Tri-chlor-naphthalene	5 g ams
Methanol	4000 c. c.
Acetone	105 c. c.
Spirit nigrosine R	20 grams

Formula III

Tri-chlor-naphthalene	5 grams
Methanol	4000 c. c.
Butyl alcohol	105 c. c.
Luxol fast black	20 grams

Where I wish to apply the dyed wax layer directly to the film base, I may coat any one of

these formulas directly on the support side of the film in a type of machine which is well known for this purpose.

The method of applying the layer directly to the film support is illustrated in Figure 1 where the dyed wax layer 3 is applied directly to the film support 1 and on the side opposite the emulsion layer 2.

A preferred embodiment of my invention is illustrated in Figure 2 in which a layer 4 soluble in the developing baths is first coated on the film support 1 and over this is coated the dyed wax layer 3, both of the latter coatings being on the surface of the film support opposite the emulsion layer 2. The soluble layer 4 consists of some substance which is easily soluble or disintegrated by the action of the ordinary photographic developing baths. Such substances are casein, gum arabic, glutenin, gliadin, albumen, and alkali soluble cellulose derivatives such as cellulose aceto-lactate or cellulose aceto-tartrate.

In carrying out this method I apply a thin layer containing one or more of these substances directly to the back of the film as indicated, and I may use a formula such as the following:

Formula IV

Casein	100 grams
Ammonia 28%	100 c. c.
Water	1050 c. c.
Ethyl alcohol	2350 c. c.

Formula V

Gum arabic	100 grams
Water	2450 c. c.
Ethyl alcohol	1050 c. c.

To Formula V it is preferable to add one to three percent of glycerine to prevent this coating from becoming brittle or producing excessive shrinkage of the backing.

This undercoating is also applied to the film in the usual type of coating machine and is dried before the dyed wax layer is applied. This undercoating may be relatively insoluble in water alone, but must be soluble in either water or weak alkali and for the purposes of my invention must be partially soluble and easily disintegrated in the ordinary photographic developing baths. Any of the substances mentioned above will answer this requirement. The coating 4 is relatively thin, that is, it will be of less thickness than the emulsion layer, though not necessarily so.

After the soluble undercoating 4 has dried, a dyed wax layer 3 is applied on top of it, as indicated in Figure 2. For this dyed wax layer I

may use any such solution of wax and a dye as given in Formulas I to III inclusive.

It will be evident that I may use a number of variations in this invention. I may, for example, use more than one dye, one or more each in the soluble layer, and in the dyed wax layer. Thus I may use two complementary dyes, one in the soluble layer and one in the dyed wax layer, complete absorption of all actinic light being thus assured. In the formulas given I have used only a single black dye, but it is understood that I do not limit myself to any particular dye or combination of dyes. It is preferable to employ a dye which is insoluble in water and the developing baths, to prevent staining of the emulsion or support.

When the dyed wax layer is applied directly to the film it may or may not be removed during development, depending upon the nature of the wax coating itself and upon the developer employed. Usually it will not be removed without special treatment. The small amount of wax remaining upon the support, even if the layer is removed, will, however, have a beneficial effect in lubricating the film and causing it to run more easily through the various types of machines employed in motion picture work. In the case of motion pictures especially, of course, it will be usually desirable either to use a layer which is removed in the processing or to take special steps to remove it.

In the case where a soluble undercoating is applied with a colored dye wax layer on top, the layer is removed during development. This is accomplished largely by the penetration of the

developing baths at the edges of the film and through minute pores of the wax layer, causing the soluble layer, together with the wax layer over it to disintegrate. The removal of the non-halation element in this case does not necessarily consist of any bleaching of the dye nor the removal of the backing as a skin. In other words, the backing does not float away in coherent pieces but rather completely disintegrates. The dyes employed need not be of the kind which are bleached or discolored during the processing.

I contemplate as my invention all variations and equivalents coming within the scope of the appended claims.

What I claim and desire to be secured by Letters Patent of the United States is:

1. A photographic film comprising a support, on one face of said support a sensitive emulsion layer, on the opposite face of said support a soluble layer containing a dye, and over the soluble layer another layer containing a wax as the primary constituent and a dye.

2. A photographic film comprising a support, on one face of said support a sensitive emulsion layer, on the opposite face of said support a layer soluble in alkali, and over the soluble layer another layer containing a wax as the primary constituent and a dye.

3. A photographic film comprising a support, on one face of said support a sensitive emulsion layer, on the opposite face of said support a thin layer containing casein, and over the latter another layer containing wax as the primary constituent and a dye.

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