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2,670,288

PHOTOGRAPHIC TRACING CLOTH

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Fig. 1

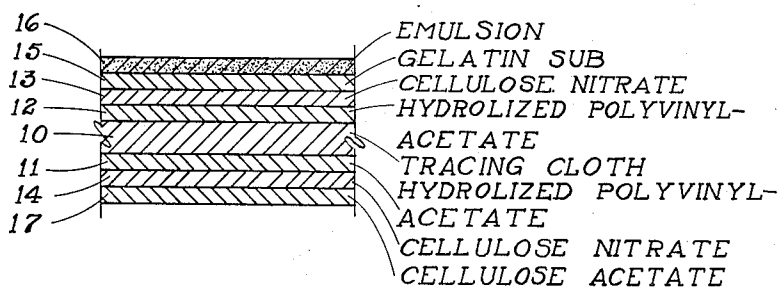
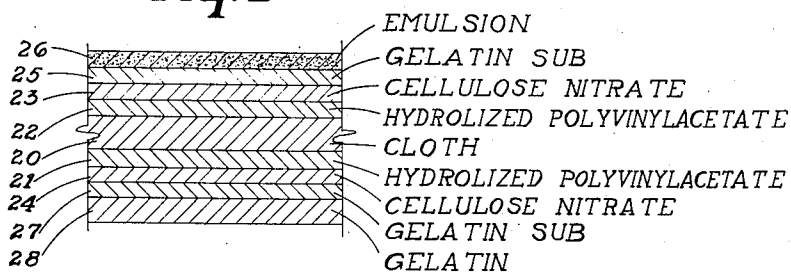


Fig. 2



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PHOTOGRAPHIC TRACING CLOTH

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4 Claims. (Cl. 95-8)

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This invention relates to photographic tracing cloth and more particularly to a photographic tracing cloth structure which has substantially improved light transmission without impairment of other desirable characteristics.

As is well understood, photographic tracing cloth is employed, for example, by being exposed to a drawing, or a negative thereof, to form an image on the tracing cloth. After proper processing, the tracing cloth may then be employed to print the image onto a blue print or other similar copying paper, or the like.

In general, photographic tracing cloth consists of a sheet of sized cloth which is waterproofed on both sides to prevent aqueous photographic solutions from attacking the sizing of the cloth, a photographic light sensitive layer being coated over one or both of the waterproofing layers. Heretofore, the waterproofing layer usually has consisted of a cellulosic material, such as cellulose nitrate, which material does not properly adhere to a starch-sized cloth without the application of some intermediate subbing material. When the tracing cloth, after exposure, is treated in aqueous photographic processing solutions even when a subbing material is employed, the waterproofing layer may come loose and permit the water to reach and swell the starch sizing of the cloth, thereby making the drawing or tracing on the tracing cloth of no value. Another objection to tracing cloth which is made in this way is that after photographic processing and drying of the material, the waterproofing layer and its emulsion sometimes peel or strip from the cloth base.

In the Nadeau and Couch Patent 2,117,814 of May 17, 1938, these difficulties are overcome by employing a layer of a mixture of gelatin and cellulose nitrate to the cloth base before the application of the waterproofing, the subbing and photographic emulsion layers.

While photographic tracing cloth made in accordance with this patent is very satisfactory, I have found that it has two undesirable features. It has a rather poor light transmission which results in a low printing speed and on prolonged immersion in aqueous liquids there is a tendency of the waterproofing layers to curl up and leave the edge of the cloth.

An object, therefore, of the present invention is an improved photographic tracing cloth which includes the desirable features of the tracing cloth described in Patent 2,117,814 and which also has superior light transmission and resistance to aqueous methods.

In accordance with the invention, these and other objects may be attained, I have found, by

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replacing the cellulose nitrate gelatin subbing layers of Patent 2,117,814 with subbing layers comprising a hydrolyzed polyvinyl acetate containing from 27 to 40% vinyl acetate. I have found that by employing these hydrolyzed polyvinyl acetate layers, the printing speed of the finished product is increased approximately 30% and the edge curl is substantially eliminated. The hydrolyzed polyvinyl acetate containing 27% vinyl acetate is preferred.

My invention will be further understood by reference to the drawing in which; Fig. 1 is a view in section of one form of a tracing cloth made in accordance with my invention which, except for the novel use of hydrolyzed polyvinyl acetate layers, is similar in structure to that of Patent 2,117,814; and Fig. 2 is a quite similar structure having, however, a gelatin coating in the place of the cellulose acetate coating of Fig. 1.

In making the photographic tracing cloth shown in Fig. 1, a solution of the hydrolyzed polyvinyl acetate is applied to both sides of a calendered, starch-sized cloth base. After this solution is dried a solution of cellulose nitrate is applied over both hydrolyzed polyvinyl acetate layers and permitted to dry. On one side of the element thus formed a thin layer of gelatin is applied and over this layer is coated the light sensitive photographic emulsion. If the tracing cloth structure shown in Fig. 1 is desired, the cellulose nitrate layer on the side opposite the emulsion side may be overcoated with cellulose acetate; or, if the structure shown in Fig. 2 is desired, then instead of the acetate layer a mixed gelatin-cellulose nitrate layer may be used over which an anti-halation gelatin coating is placed.

The structure of my improved tracing cloth may further be apparent by reference to the drawing. In Fig. 1 of the drawing 10 represents a calendered starch-sized tracing cloth. On this cloth base are coated layers 11 and 12 of the selected hydrolyzed polyvinyl acetate. The following solution is typical of the one which may be advantageously employed.

	Percent
Hydrolyzed polyvinyl acetate (27% vinyl acetate) -----	2
Water -----	20
Methyl Cellosolve -----	15
Methyl alcohol -----	63

These layers are dried and over them are respectively coated layers 13 and 14 of cellulose nitrate. The cellulose nitrate employed is preferably a high alcohol soluble and low viscosity nitrate.

A suitable composition for the solution employed to coat this layer is the following:

	Percent
Cellulose nitrate-----	5
Acetone-----	16.23
Amyl acetate-----	60.0
Methyl alcohol-----	16.0
Butyl alcohol-----	2.0
Castor oil-----	0.12
Triphenyl phosphate-----	0.65

These layers are dried and on one of them is laid a thin gelatin layer 15 which may be coated from the following solution:

	Percent
Gelatin-----	1.0
Acetic acid-----	1.0
Water-----	5.0
Methyl alcohol-----	70.0
Acetone-----	23.0

The gelatin layer is dried somewhat and over it is laid an ordinary gelatino-silver halide emulsion 16.

On the opposite side of the element formed by the application of these layers to the cloth support 10, a layer 17 of any suitable backing material, such as cellulose acetate, is coated over the cellulose nitrate layer 14. The cellulose acetate employed may be hydrolyzed cellulose acetate of a precipitation value of 70% and may be coated from an acetone solution.

Other cellulose organic acid esters such as cellulose acetate propionate could be employed in place of the cellulose acetate layer shown as 17 in the drawing.

In making the photographic tracing cloth shown in Fig. 2, a procedure, in general, similar to that employed for making the tracing cloth of Fig. 1 may be followed. A solution of the hydrolyzed polyvinyl acetate is applied to both sides of the calendered, starch-sized cloth base 20. The resulting layers are shown respectively at 21 and 22 on the drawing. After these layers are dried, a solution of cellulose nitrate is applied over both hydrolyzed polyvinyl acetate layers 21 and 22 to form nitrate layers 23 and 24. These nitrate layers are dried and coated with a gelatin subbing coating to produce layers 25 and 27 which are dried. On gelatin layer 25 is coated a light sensitive photographic emulsion 26 as by standard methods. On the opposite layer an additional gelatin layer 28 is coated which prevents curling of the tracing cloth and serves also as an anti-halation layer. The coating compositions employed in connection with the tracing cloth shown in Fig. 1 are satisfactory for employment in making the tracing cloth of Fig. 2.

It is to be understood that this invention is not limited to the exact type of sensitive tracing cloth and the sequence of layers described in the above specification. For example, the support may be any type of suitable cloth or paper which has been sized with materials that swell or dissolve in water. Other materials may be employed for the waterproofing layer and additional layers of other material may be applied to improve the dry and wet stripping characteristics of the finished element. I contemplate the use of all modifications and equivalents coming within the scope of the appended claims. The various layers may be coated by any suitable methods known in the art.

I claim:

1. A photographic tracing cloth having improved light transmission comprising a sized cloth base, a layer of hydrolyzed polyvinyl acetate having a vinyl acetate content of 27 to 40% on each side of the cloth base, a separate layer of cellulose nitrate over each of the hydrolyzed polyvinyl acetate layers, a silver halide emulsion layer attached to one of the cellulose nitrate layers by a gelatin layer, and a cellulose acetate layer over the other of said cellulose nitrate layers.

2. The tracing cloth of claim 1 in which the polyvinyl acetate has a vinyl acetate content of 27%.

3. A photographic tracing cloth having improved light transmission comprising a sized cloth base, a layer of hydrolyzed polyvinyl acetate having a vinyl acetate content of 27 to 40% on each side of the cloth base, a separate layer of cellulose nitrate over each of the hydrolyzed polyvinyl acetate layers, a silver halide emulsion layer attached to one of the cellulose nitrate layers, and a gelatin layer over the other of said cellulose nitrate layers.

4. The tracing cloth of claim 3 in which the polyvinyl acetate has a vinyl acetate content of 27%.

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