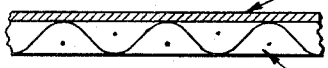
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FIREPROOF SCREEN FOR PROJECTED IMAGES

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FIREPROOF SCREEN FOR PROJECTED IMAGES

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6 Claims. (Cl. 88—24)

This invention relates to a screen for projected images and more particularly to a fireproof motion picture screen.

This invention has as an object the production of an improved fireproof motion picture screen. Other objects will appear hereinafter.

The objects of the invention are accomplished by the following invention in which a suitable sheet of material is treated to render it fire resistant after which a special coating composition is applied which yields a fireproof, light colored coating. The single figure in the drawing is a cross sectional view of a cinema screen embodying the preferred form of the invention.

The sheet material or base for my improved screen preferably consists of a suitable fabric, such as a plain weave material commonly known as sheeting, or a twill weave material known either as a drill or sateen. The fabric is rendered fire resistant by any one of the well-known treatments for rendering fabrics fire resistant, such as for instance, treatment with tungsten salts, boric acid-borax treatment, or ammonium hydrogen phosphate treatment. While any of these are satisfactory, the ammonium hydrogen phosphate treatment is preferred because of simplicity of use and low cost. This operation is carried out as follows:

The fabric is first treated with diastasing agents to remove the excess of starch which is present in a sized material, and then given 5 passages in a dye jig through a 25% solution of ammonium hydrogen phosphate. After this treatment the fabric is passed through mangle rolls and then dried by any suitable means used for drying fabrics.

The treated fabric is then coated with my improved fireproofing coating composition having the following preferred ratio of ingredients.

	Parts by weight
White pigment	9.58
Tricresyl phosphate	12.98
Ammonium magnesium phosphate	9.58
Cellulose nitrate	7.66
Solvent or dispersing medium for cellulose nitrate	60.20
	100.

This coating composition is preferably made by mixing the following ingredients in the proportions and in the manner indicated below:

	Parts by weight
White pigment	25.5
Tricresyl phosphate	34.0
Ammonium magnesium phosphate	25.5
A special pyroxylin dispersion	15.0
	100.

The special pyroxylin dispersion consists of a dispersion of about 5 ounces of cellulose nitrate in a dispersing medium consisting of 40% ethyl acetate and 60% denatured alcohol. Other solvent mixtures including hydrocarbon solvents may be used if desired. This special pyroxylin dispersion, which constitutes a grinding medium, is then ground 8 to 12 hours in a ball or pebble mill with the pigment, tricresyl phosphate and the ammonium magnesium phosphate. The final coating composition is then made by mixing from 40% to 50% of this pigment mixture with from 60 to 45% of a cellulose nitrate dispersion of a concentration of approximately 17 to 20% in a dispersing medium consisting of 40% ethyl acetate and 60% denatured alcohol. The preferred coating composition consists of 47% pigment mixture and 53% of the cellulose nitrate dispersion.

The side of the screen used as the reflecting surface is coated with this white coating composition. The other side may be coated with a similar composition or with a colored composition as desired. The coating composition is spread on the fabric by the means usually used in the art to the extent of from about 11 to 18 ounces of solids per square yard on the reflecting side and from about 2 to 7 ounces of solids per square yard on the other side. It is preferred to have about 14 ounces of solids per square yarn on the reflecting side and about 4 ounces per square yard on the other side. The pigment composition, including the two phosphates mentioned may comprise 50 to 90% of the coating, and the cellulose nitrate from 50 to 10%.

Various changes may be made in the proportions of the ingredients used as well as in the ingredients themselves. Thus, in mixing, the pigment, tricresyl phosphate, and ammonium

magnesium phosphate, can be ground without the nitrocellulose dispersion, but the best results are obtained by having it present. In the method of making the composition by grinding the pigment and phosphates with the special pyroxylin dispersion, more or less satisfactory results can be obtained by varying the pigment from 50 to 5 parts in one hundred parts by weight, the tricresyl phosphate from 45 to 20 parts, the ammonium magnesium phosphate from 5 to 50 parts and the special pyroxylin dispersion from 0 to 25 parts. The pigment composition which is mixed with the pyroxylin dispersion and applied to the sheet or base material will then vary between the following approximate limits:

	Parts by weight
White pigment	50 to 5
Tricresyl phosphate	45 to 20
Ammonium magnesium phosphate	5 to 50
Cellulose nitrate	0 to 1.05
Dispersing medium for cellulose nitrate	0 to 23.95
	100 100.

It is desirable however that the cellulose nitrate, or other cellulose ester, be present in a quantity sufficient to function as a grinding and binding agent for the pigment, tricresyl phosphate and ammonium magnesium phosphate.

The pigment mentioned may be any suitable white pigment, as for instance, pure titanium oxide, calcium or barium base titanium pigment, lithophone or zinc oxide. The tricresyl phosphate is selected because it functions, not only as a softener, but also as a fire resistant agent. The ammonium magnesium phosphate is also a fire resistant agent which may be replaced by other ammonium salts of the same character as ammonium manganese phosphate, ammonium magnesium arsenate, ammonium manganese arsenate, etc. While it is desirable, when using an inflammable fabric base, to fireproof the fabric itself, the application of my improved coating composition is sufficient to render the screen fireproof. The finished screen may be perforated with the usual small holes when sound reproducing apparatus is to be placed at the rear of the screen. The cellulose nitrate which functions as a grinding vehicle and a binding agent for the fireproofing agents may be replaced by other cellulose esters, as for instance, cellulose acetate.

My improved screen has a white matte surface and is fire resistant in the true sense of the word in that it will not support combustion after being subjected to a flame and the flame later removed. In other words, if the flame of a gasoline torch is played on the surface of this material, the material will not burn or support combustion in any way, but merely char.

As many apparently widely different embodiments of this invention may be made without departing from the spirit and scope thereof, it is to be understood that I do not limit myself to the specific embodiments thereof except as defined in the appended claims.

I claim:

1. A fireproof screen for projected images having a base and a white matte reflecting surface consisting of a coating thereon comprising a cellulose ester, a white pigment, a softening agent and an ammonium metal salt selected from the class consisting of ammonium metal phophates and ammonium metal arsenates.

2. A fireproof screen for projected images having a base and a white matte reflecting surface consisting of a coating thereon comprising cellulose nitrate, a white pigment, tricresyl phosphate and an ammonium metal salt selected from the class consisting of ammonium metal phosphates and ammonium metal arsenates.

3. A fireproof screen for projected images having a fire resistant fabric base and a white matte reflecting surface consisting of a coating thereon comprising a cellulose ester, a white pigment, a softening agent and an ammonium metal salt selected from the class consisting of ammonium metal phosphates and ammonium metal arsenates.

4. A fireproof screen for projected images having a fire resistant fabric base and a white matte reflecting surface consisting of a coating thereon comprising cellulose nitrate, a white pigment, a softening agent and an ammonium metal salt selected from the class consisting of ammonium metal phosphates and ammonium metal arsenates.

5. A fireproof screen for projected images having a fire resistant fabric base and a white matte reflecting surface consisting of a coating thereon comprising a cellulose ester, a white pigment, tricresyl phosphate and an ammonium metal salt selected from the class consisting of ammonium metal phosphates and ammonium metal arsenates.

6. A fireproof screen for projected images having a fire resistant fabric base and a white matte reflecting surface consisting of a coating thereon comprising cellulose nitrate, a white pigment, tricresyl phosphate and an ammonium metal salt selected from the class consisting of ammonium metal phosphates and ammonium metal arsenates.

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