

UNITED STATES PATENT OFFICE

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MILDEWPROOF FABRIC AND PROCESS OF MAKING SAME

No Drawing.

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Our invention relates to mildewproofed fabrics and to the process of making same, and more particularly to the method of mildew proofing a heavy fabric such as duck, which is coated with a colored pyroxylin "dope" in such a manner that a pliable fabric highly resistant to mildew fungi and spores, and also highly water-resistant, and of pleasing appearance, is produced.

One of the most important problems faced by manufacturers of articles composed of or covered with fabric material designed to be used in locations where they are exposed to atmospheric conditions—for example awnings, and the like—is the tendency of such fabrics to mildew, which spoils their appearance and rots their substance. Numerous attempts have been made to overcome this difficulty by treating such fabric with various chemicals, but such treatment has heretofore failed to impart the desired mildewproofing character to the fabric, and in certain instances has considerably impaired the appearance and pliability of the same. It has been found that where the fabric is coated with an oil-containing varnish or paint the coating itself is attacked by mildew, the tendency to mildew increasing with increase in the amount of oil in such coating. This property of oil-containing coatings is strongly in evidence in the case of fabrics covered with a layer of pyroxylin dope or lacquer wherein an oil, such as castor oil, is added to the nitrocellulose base to increase the flexibility and pliability of the coating. An increase in the oil content of the dope for the purpose of increasing the pliability of the finished fabric was found to be accompanied by a decrease in the resistance of such fabric to mildew, so that a gain on the one side was offset, or more than offset, by a loss on the other. All attempts heretofore made to increase the mildew resistance of fabrics to our knowledge have been accompanied by a decrease in the flexibility or pliability of the finished product, or by a loss in the appearance of such product, or both.

It is an object of the present invention so to treat fabrics that they are made substantially resistant to mildew, while at the same time

their appearance and pliability are not only not impaired, but are even improved.

In accordance with our invention the fabric to be mildewproofed may be first treated with a suitable chemical to render the same proof against mildew and is then treated with a pyroxylin dope within which may be suspended or dissolved a pigment or other coloring matter. The dope is coated or spread on the fabric preferably by means of a knife. The pyroxylin dope may or may not contain a mildewproofing chemical which is compatible with the pyroxylin and with the solvent thereof. Where a mildewproofing agent is used in the dope, the latter may contain a high percentage of oil to render the coating extremely flexible without increasing the tendency of the coating to mildew. We have found that such extremely pliable coatings may be obtained with pyroxylin solutions that both sides of the fabric may be coated therewith; or if desired the fabric may be coated on both sides with solutions having differently colored pigments suspended therein.

As mildewproofing agents for the fabric there may be used any of the known mildewproofing substances, such as aluminum acetate, lead oleate, the salts of the rare earths or mixtures thereof, such as are obtained from monazite sand, etc. The mildew-proofing materials employed with the dope with which the fabric is coated may comprise the oleates, palmitates, stearates and resinsates of aluminum, zinc, lead, calcium, etc; and, in general, the insoluble metallic soaps or mixtures thereof, zinc resinate being particularly suited to our purpose. We have found that essential oils are also applicable as mildewproofing agents. The plasticizer for the pyroxylin dope may be any known plasticizer, such as tricresyl phosphate, a vegetable oil such as castor oil, etc. The dope is preferably spread on the fabric by means of a doctor blade; the fabric thus becomes coated in such manner that the hollows of the fabric, or the spaces between the yarn, are filled with the dope while the raised portions of the fabric, or the yarns themselves, receive only a light coating, thereby producing a

pleasing pebble effect. The coating so produced has also a highly desirable gloss or sheen, in contradistinction to the coating produced by painting or printing with oxidizing oil paints or inks, such as linseed oil paints, whose coatings lack flexibility and pliancy and are dull in appearance and harsh to the touch.

In carrying out our invention we may coat a fabric, preferably of a rather heavy texture, such as duck, directly with the pyroxylin dope described below, or we may first impregnate such fabric in a vat or between rolls or in a jig with a solution of a mildew-proofing agent, for example aluminum acetate or a water-insoluble metallic soap such as lead oleate etc. or mixtures thereof, in a suitable solvent. The fabric is then dried to remove the solvent. If the fabric has been treated with a solution of aluminum acetate in water, the drying operates to render the salt insoluble in water. The fabric, whether it has been so pre-treated or not, is then coated with a pyroxylin dope containing, for example, the following ingredients:

- 12½ lbs. pyroxylin (dry weight)
- 55 lbs. blown or processed castor oil (which has been heated)
- 5 lbs. zinc resinate
- 35 lbs. pigment
- 90 lbs. (approximately) solvent

The dope is prepared by first dissolving the pyroxylin in the solvent, which may be composed of 25% by weight of ethyl acetate, 50% benzol and 25% alcohol. The zinc resinate or other suitable metallic soap is dissolved in the castor oil, heat being employed if necessary, after which the pigment is ground with such oil solution to suspend the same therein in a fine state of division. The pyroxylin solution and the oil mixture are then mixed together, and the fabric coated with the resulting mixture by means of a doctor blade, which operates to spread the dope thereon. This solution may be applied to both sides of the fabric or else, as stated above, the opposite sides of the fabric may be coated with mixtures containing different pigments so as to obtain two color effects.

It will be found that fabrics treated as above described, even when coated on both sides thereof, are extremely pliable, have a pleasing glossy and pebbly effect, and are soft to the touch. A fabric produced in accordance with our process is stable against atmospheric conditions, is substantially mildew-proof, and is not liable to rot as are fabrics treated with a paint or ink having an oxidizing oil base. Variations from the specific example given by way of illustration and from the proportions indicated therein may be resorted to within the scope of the appended claims without departing from the spirit of the invention.

We claim:

1. The method which comprises impregnating a fabric with a mildew-proofing agent and spreading a coating of pyroxylin dope thereon containing a plasticizer and zinc resinate.

2. The method which comprises coating a fabric with a pyroxylin dope containing zinc resinate.

3. A mildew-resistant material comprising a fabric impregnated with aluminum acetate, and coated on at least one side with a pyroxylin lacquer containing a plasticizer and zinc resinate.

4. A mildew-resistant material comprising a fabric coated on at least one side with a pyroxylin lacquer containing a plasticizer and zinc resinate.

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