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BLUEPRINT, PHOTO-VELLUM, AND SIMILAR SENSITIZED CLOTHS

Arnold Leroy Lippert and William P. Hall, Wilmington, Del., assignors to Joseph Bancroft & Sons Co., Wilmington, Del., a corporation of Delaware

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5 Claims. (Cl. 95—7)

This invention relates to improvements in sensitized cloths, such as blueprint cloth and photovellum, and to a treatment therefor.

The invention will first be described in connection with blueprint cloth. Such cloth is sized with a customary sizing, such as one consisting of about 40% starch, about 50% mineral matter such as kaolin, talc and barium sulphate, about 5% softener such as sulphonated tallow, ammonium stearate, and paraffin, and about 5% titanium dioxide; or the usual variations thereof. The sized cloth is then sensitized, ferrocyanide being ordinarily employed.

One of the primary objects of the invention is to provide such a sized cloth, in which, however, the color is improved and in which the likelihood of bleeding of the exposed portions into the unexposed portions is substantially prevented, giving sharpness of lines.

It is a further object to provide such a cloth in which the sizing does not bleed into the solutions and, therefore, the solutions do not build up in concentration of sizing, as is the case with the usual sized cloth employed for this purpose.

More particularly, it is an object of the invention to fix the sizing and to increase its water repellence, extending the useful life of the print.

We also propose a treatment for such blueprint cloth which will secure the above characteristics in a simple and economical manner.

In carrying out our invention, we proceed as follows. Sized cloth, preferably calendered to increase smoothness of surface, is treated with a solution of the resin, urea formaldehyde. This is a synthetic, water soluble, water white resin having, in the polymerized state, some capacity for absorbing moisture. The solution is preferably prepared by dissolving the urea and the formaldehyde in water; and dissolving a basic or acid catalyst, such as ammonium phosphate, potassium oxalate, sodium acetate and the like in water, using an amount thereof equal to about two to four percent of the weight of the resin. These two solutions are mixed in proper concentration, the preferred concentration of the resin being from about 1% to about 10%, and desirably 5%, of the weight of the total solution. One may go as high as 25%.

This solution is applied to the sized cloth in any known way, such, for example, as a Scotch mangle or friction padder rolls, the lower one of which runs in the solution. The cloth may be run through twice to treat both faces, and the lower roll is preferably of relatively soft rather than hard rubber.

By pre-calendering the sized cloth, less of the solution is required for a given coverage.

The treated cloth is now run over heating cans of a temperature of about 200° F. for about 1 minute. The roll of cloth is then allowed to cure for about 24 hours after which it is steamed and then calendered at about 250° F., with about four tons pressure, being run through once on each side.

The resin solution primarily fixes the starch which is the adhesive of the sizing. The heat sets or polymerizes the resin with the result that the sizing is fixed and remains in place. The polymerized resin is water insoluble.

The cloth is now sensitized on one side, as before indicated. Although the treatment with the resin solution renders the cloth somewhat more water repellent than untreated sized cloth, nevertheless because of the capacity of the particular resin in the polymerized state to absorb some moisture, it can be effectively sensitized. After the print is made from the cloth, it is subjected to an oxidizing medium, such as sodium dichromate in solution, and is washed and dried.

When a print made with such treated cloth is developed, the effect is to make the blue appear to be more deep in color. This is probably not actually the case but it seems to occur. The treatment prevents the dispersion of the sizing so that, in the case of the treated cloth, less of the white appears in the blue and the blue, therefore, appears deeper in color, as contrasted with untreated sized cloth. Similarly, the fixing of the sizing prevents bleeding from the exposed areas into the unexposed areas, in consequence of which the lines appear much more sharp. Likewise the fixing of the sizing practically eliminates bleeding into the sensitizing and developing solutions and washes, so that they do not build up in concentration of sizing, as is the case with untreated sized cloth. The treated cloth is also superior in the other respects noted.

Photo-vellum is similarly treated.

We claim:

1. The process of treating sized cloth to be sensitized which comprises subjecting the dry sized cloth to a solution of urea formaldehyde, polymerizing the resin, and sensitizing the treated cloth when dry.

2. The process of treating sized cloth to be sensitized which comprises subjecting the dry sized cloth to a solution of urea formaldehyde, polymerizing the resin, and sensitizing the treated cloth when dry, the concentration of the resin

in the solution being substantially from 1% to about 10% of the total solution by weight.

3. The process of treating sized cloth to be sensitized which comprises subjecting the dry sized cloth to a solution of urea formaldehyde, subjecting the cloth to a temperature of about 200° F. for about one minute, allowing the treated cloth to cure for about 24 hours, calendering the cured cloth and sensitizing.

4. The process of treating sized cloth to be sensitized which comprises subjecting the dry sized cloth to a solution of urea formaldehyde, subjecting the cloth to a temperature of about 200° F. for about one minute, allowing the treated cloth to cure for about 24 hours, calendering the cured cloth and sensitizing, the cured cloth being steamed before calendering.

5. The process of treating sized cloth to be sensitized which comprises subjecting the dry sized cloth to a solution of urea formaldehyde, subjecting the cloth to a temperature of about 200° F. for about one minute, allowing the treated cloth to cure for about 24 hours and sensitizing, the cured cloth being steamed before calendering, the calendering being done at about 4 tons per sq. in. pressure.

ARNOLD LEROY LIPPERT.
WILLIAM P. HALL.