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IMPROVED TRANSPARENT FABRIC AND PROCESS FOR PRODUCING SAME

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This invention relates to an improved transparent fabric and to the process for producing such fabric. By transparent material I mean to include material which is known in the trade as "transparent", "permanent organdie", and "glass batiste" and similar fabrics. Such materials have been produced by various methods as described for example in the following and other United States patents: 1,144,655, 1,201,961, 1,288,885, 1,392,265, 1,439,512, to Georges Heberlein; patent to Eduard Heberlein 1,439,517, patent to Albert Bodmer 1,666,082; patent to Heinrich Forster 1,430,163; and patent to Oscar Klauser 1,258,225.

It has been found that fabrics of the type mentioned undergo a change after manufacture, namely they assume the undesired characteristic of curling. This characteristic is noticeable for instance if one cuts a piece from such a fabric and lays it flat. The edge of this cut piece will start to curl up in a direction diagonal to the angles of the crossing threads.

The principal object of the present invention accordingly is to produce a marketable product free from the objection noted and a simple process for its production.

The invention accordingly comprises the novel products as well as the novel processes and steps of processes according to which such products are manufactured, the specific embodiments of which are described hereinafter by way of example and in accordance with which I now prefer to practice the invention.

This tendency to curl has been a characteristic of such transparent goods for many years and has always been recognized during that time as an objectionable feature. Numerous attempts have been made to remove the internal strain in the fabric which is believed to occasion the curling, during that period. When the goods were first put on the market and that tendency to curl was recognized, I believed that it was due to some of the conditions of treatment in the sulfuric acid bath and other swelling agents employed. I therefore carried out experiments varying the concentration, time and temperature factors involved in these treatments, but I was unable thereby to correct this tendency to curl.

It has now been found that this fault can be overcome if the fabric treated by a swelling agent, preferably a parchmentizing by sulfuric acid, to produce the transparent effect is dried and pressed as by calendering to remove the internal strains tending to make it curl. This discovery was unexpected. Transparent goods or permanent organdies are not ordinarily calendered. Calendering for the usual purposes where it is employed, viz. to produce a glossy smooth finish was not required to be employed in preparing these goods for the market and to use calendering for the purposes which I herein employ it for, was resorted to by me not to produce the usual effects of such calendering, but to overcome this unusual quality in the goods, namely their tendency to curl. I have found that successive passages through the various jaws of the calender relieves the inner tension of the fabric and thereby its inclination to curl up disappears. The action of the calender for this purpose occurs only if successively at least two calender jaws are passed. The process can be applied to parchmentized and other fabrics consisting of vegetable and cellulose-containing fibers.

I give below embodiments of my invention. These embodiments are to be regarded as examples only, and it is to be understood that the invention is not restricted thereto:—

Example 1.—A mercerized muslin fabric is parchmentized with sulfuric acid of 55° Bé. in the usual manner, dried and finally passed through all of the jaws of a four roller calender under moderate pressure. The product after such treatment, in contradistinction to the untreated product, shows substantially no tendency to roll when a piece of it is cut and laid flat.

Example 2.—A bleached previously mercerized cotton batiste is parchmentized with sulfuric acid of 53° Bé. and thereafter mercerized once more, dried and finally passed through all five jaws of a six-roll calender without special weighting of the rolls and only under the weight of the calender rolls themselves. The so-treated material shows substantially no tendency to roll up.

Example 3.—Bleached cotton batiste is impregnated with caustic soda of 32° Bé. at minus 8° C. for 1½ minutes, washed, then mercerized under tension in normal manner. It is then washed and dried and treated with sulfuric acid of 54° Bé.; it is then washed and dried and passed through all the jaws of a four-roll calender under moderate weight. The so-treated product has become transparent and the tendency to curl therein has been removed.

Example 4.—Bleached cotton fabric is parchmentized with sulfuric acid of 56° Bé. and thereafter mercerized with caustic soda of 30° Bé.; it is then washed and dried and finally passed

through the four jaws of a five-roll calender without special weighting. The product after such treatment shows substantially no tendency to roll, when a piece of it is cut and laid flat.

Example 5.—Bleached cotton fabric is impregnated with caustic soda of 30° Bé. specific gravity at −10° Cels. for 2 minutes, washed, dried and afterwards calendered with a three-roll calender under moderate pressure.

Example 6.—A cotton fabric is dipped in sulfuric acid having a gravity of 46° Bé. for 2 minutes, washed and dried and then subjected for 5 seconds to the treatment of sulfuric acid of 53° Bé. Thereafter the fabric is washed and dried again and mercerized in the usual manner with soda lye under tension. At last the fabric is calendered with a five-roll calender to get a non-curling transparent fabric.

The product as noted obtained by the process of the above examples shows the transparent effects desired, with the tendency to curl substantially eliminated.

It is to be understood that the invention may be applied not only to all-over effects, but also to pattern effects. It is recognized that in some instances pattern effects may be of a character such that they would not occasion curling and in that case there would be no necessity to apply the invention to prevent curling. In cases, however where the pattern is of a character such that it tends to occasion curling, the process may be applied to eliminate such curl.

I claim:

1. A process for preparing non-curling transparent fabric which comprises treating cloth with a swelling agent to render it transparent and passing the cloth through successive jaws of a calender having at least two jaws, removing the tendency to curl from said fabric.

2. A process for preparing non-curling transparent fabric which comprises treating cloth with a swelling agent and a mercerization agent to render it transparent and passing it through at least two successive jaws of a calender to eliminate the strains therefrom and to prevent the cloth from curling.

3. A process for preparing non-curling transparent fabric which comprises treating cloth with sulfuric acid and mercerizing to render it transparent, drying the cloth and passing it under light pressure through several successive jaws between the rolls of a calender to eliminate the strains from the fabric and to prevent the fabric from curling.

4. A transparent fabric prepared by treating fabric with a swelling agent to render it transparent and then passing it through at least two jaws of a calender, said fabric having substantially no inner tension in its fibres to cause curling and which, when cut and laid flat, exhibits substantially no tendency to curl up in a direction diagonal to the angles of the crossing threads or otherwise.

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