Oct. 13, 1925. 1,557,461

H. G. F. LAUTEN

ART OF PRINTING SHEET MATERIAL

Filed May 8, 1925

Fig. 1

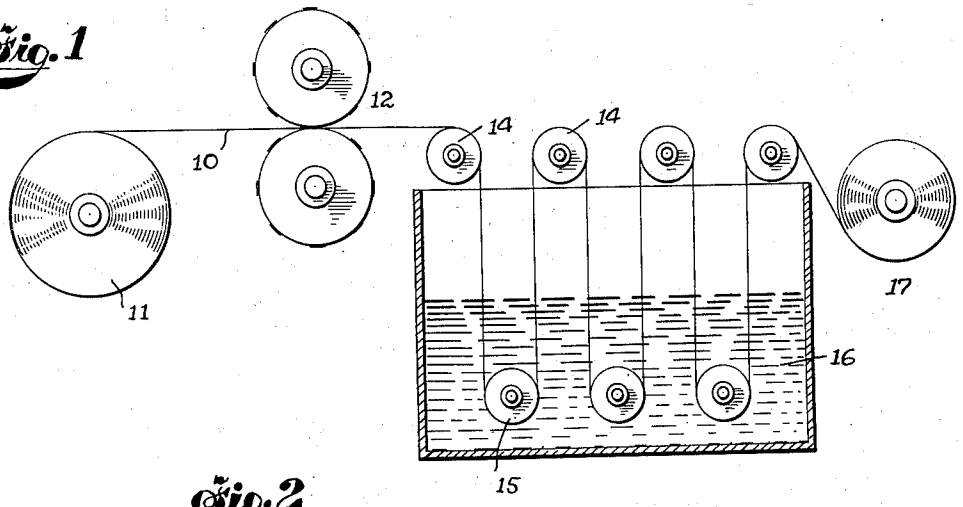


Fig. 2

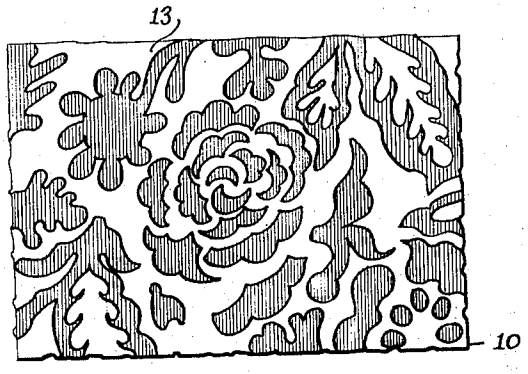


Fig. 3

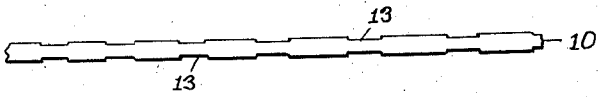


Fig. 4



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UNITED STATES PATENT OFFICE.

HENRY G. F. LAUTEN, OF BAY SHORE, NEW YORK.

ART OF PRINTING SHEET MATERIAL.

Application filed May 8, 1925. Serial No. 28,945.

To all whom it may concern:

Be it known that I, HENRY G. F. LAUTEN, a citizen of the United States, and a resident of Bay Shore, Suffolk County, Long Island, New York, have invented an Improvement in the Art of Printing Sheet Material, of which the following is a specification.

My invention relates to improvements in the art of producing two-tone or multiple tone color effects on sheet material. My improved method is especially adapted for producing these effects on textile fabrics, but the invention can be applied to any sheet material susceptible of taking color. In the specification I shall refer more particularly to the application of the method to coloring textile fabrics, but it will be understood that it can be extended to other uses. My invention is intended to lessen the cost of producing patterns or designs in two-tone or multiple tone effects on fabrics, and at the same time produce better goods. Usually these effects are produced by running the fabric through printing rollers, and usually through a succession of printing rollers, each being adapted to impress a certain shade on the goods. This requires expensive rollers and a good deal of mechanism, which I dispense with.

The art of printing designs is extensive and carried out in many ways, but my invention eliminates the use of printing rollers entirely, and produces goods having a better and more lasting effect than the two-tone or multiple tone goods produced in any of the customary ways. At the same time my invention is intended to leave the goods so that if desired they can be further printed or submitted to any usual embossing or coloring processes or mercerization, or in fact any of the many operations customary in this art. I have found by experiment and practice that if fabrics have a pattern or design impressed upon them without color, they may then be subjected to dyeing or coloring so that the dye will permeate the threads, and the parts which have been compressed will absorb less color because of the compression, and consequently the shade will be lighter, and the depth of shade varies inversely with the depth of the impressed pattern, so that if parts are deeply impressed, these parts will be correspondingly light in shade because of the lack of absorption, and the shade will graduate from the deeper impressions to the parts which are not compressed, and thus a very pleasing shading is had, and it is produced in the simplest manner. Furthermore, by first impressing the pattern and then coloring or dyeing the goods, the application of the liquid restores the surface of the goods so that they appear smooth when finished. A further advantage of this method is that naturally the pattern has the impression on both sides of the goods, and consequently after the color is applied, the pattern shows on both the front and back of the goods, giving a pleasing woven or jacquard effect.

It will be readily seen that my improved method may be applied to either bleached or unbleached goods, and when producing the cheaper grade goods, my method has a distinct advantage over the usual zinc or over-printing process, because in the latter case the surface of the cloth is covered, which completely effaces the character or lustre thereof, and interferes with mercerizing or other processes. With my improved method, however, it will be seen that if the goods are first embossed or have the pattern impressed as stated, they will take the color in the manner described, and any subsequent printing or finishing can easily be carried out. All of which will appear more clearly from the description which follows.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar reference characters indicate corresponding parts in all the views.

Figure 1 is a diagrammatic elevation of a means of carrying my improved method into effect.

Figure 2 is a detail showing how a pattern is impressed on a strip of goods.

Figure 3 is a diagram illustrating the effect of the compression, and

Figure 4 is a diagram showing the effect after color has been applied.

The drawings are by way of example and have nothing whatever to do with the method except to show one way of carrying it into effect, and obviously a pattern can be impressed on goods of the kind described in very many ways.

Figure 1 shows a convenient means in which the goods or stock 10 is fed from a

roll 11, and passed through embossing rollers 12, the raised parts of which represent the pattern 13 which is impressed on the goods. After this has been done, color can be applied in any well known or preferred way. For example the stock can be led over guide rollers 14 and immersion rollers 15, so as to pass it through a bath of dye 16, and ultimately it can be rolled up again as shown at 17, or taken care of in any preferred way, and it will be evident that short strips can be treated by passing them through the rollers 12 and then immersing or otherwise coloring them.

When the stock has passed through the rollers 12, the design or pattern will be condensed as shown at 13, and in Figure 3 I have shown this effect very much exaggerated; but after the stock has been subjected to color, the moisture swells up the condensed parts so that the stock will appear smooth as in Figure 4, but the pattern will appear on both sides of the goods. This is especially true because the impressions are made while the stock is dry.

It will be readily seen that where the parts are heavily impressed, they will obviously be less absorbent, and therefore will take up less dye and the deeper impressions will be of lighter shade; but as the impression tapers off towards the body of the goods, the condensed parts will gradually become more absorbent, so that by graduating the impression of the pattern, sharp lines or graduated shades can be produced as desired.

It will be noted in carrying out the process that the goods are actually dyed, as the dye penetrates the threads and produces a lasting color, and further that any type of color or dye can be used without affecting the invention.

As already indicated it will also be noticed that after the goods have been treated by my method to give the desired two-tone or multiple tone effect, they can be readily subjected to any of the usual or preferred processes to further elaborate them without affecting my improvement, which is fundamental and which therefore would be the first step in producing a desired multiple tone or two-tone effect on the goods.

From the foregoing description it will be seen that the method can be very easily carried into effect in a great variety of ways, and that it may be conveniently applied with great economy not only to textiles, but to other fabrics and sheet materials susceptible of coloring.

I claim:—

1. The improvement in the art of producing a design or pattern on sheet material, which comprises compressing parts of the material while the material is dry, and then applying color thereto whereby the compressed parts being less absorbent will have a lighter shade.

2. The improvement in the art of producing a design or pattern on sheet material with one color but different shades, which comprises compressing parts of the dry material and then applying a single color thereto, whereby the compressed parts being less absorbent will have a lighter shade.

3. The improvement in the art of producing a design or pattern on sheet material, which comprises compressing a pattern on the said material while in the dry state and then applying a color thereto, whereby the pattern being less absorbent will have a lighter shade.

4. The improved method of producing a design or pattern on sheet material, which comprises embossing the dry material and then applying a single color thereto whereby the parts compressed by embossing will be less absorbent and have a lighter shade.

5. The improved method of producing a design or pattern on one color fabric, which comprises compressing or condensing the dry fabric at the parts where a shade is desired, and then applying a single color to the fabric whereby less color will be absorbed and a lighter shade produced at the condensed places.

6. The improved method of producing a design or pattern on one color fabrics, which comprises condensing without color a pattern on the dry material under treatment, and then applying a single color to the fabric, whereby the pattern being less absorbent will have a lighter shade.

7. The method of producing a multiple tone effect on fabrics, which consists in first impressing a pattern without color on the dry fabric, and then coloring it, whereby the depth of the shade varies inversely with the depth of the impression.

8. The method of producing a multiple tone effect on fabrics, which comprises first impressing a pattern without color on the dry fabric, and next dyeing the threads of the fabric, whereby the compressed parts being less absorbent will be of lighter shade.

9. The method of producing a multiple tone effect on fabrics, which consists in first impressing a pattern on the dry fabric, and then immersing the fabric in dye, whereby the condensed parts being less absorbent will take a lighter shade.

10. The method of producing a multiple tone effect on sheet material, which comprises first impressing a pattern on the dry material, and then coloring it, whereby the compressed parts being less absorbent will take a lighter shade.

In testimony whereof, I have signed my name to this specification this 6th day of May, 1925.

HENRY G. F. LAUTEN.