

UNITED STATES PATENT OFFICE.

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METHOD OF PRINTING FABRICS.

SPECIFICATION forming part of Letters Patent No. 599,134, dated February 15, 1898.

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To all whom it may concern:

Be it known that I, THOMAS F. STIMPSON, of the city and county of Providence, in the State of Rhode Island, have invented a certain new and useful Method of Printing Fabrics; and I do hereby declare the following specification to be a full, clear, and exact description thereof.

The object of the invention is to produce, by means of printing, certain novel and peculiar effects not heretofore produced by printing, so far as I am aware.

To that end my new method consists, primarily, in producing a black or other dark ground pattern on the fabric and printing upon the fabric a pattern of comparatively bright color, the figures of which do not register with or fit the black or other dark ground pattern, whereby the figures composing the bright-color pattern will not show in their entirety on the finished fabric, but only in fragments, varying portions of the bright-color figures being obliterated or concealed by the black or other dark ground pattern.

For the better understanding of my invention I will first describe one way of carrying out my new method, and will then point out certain variations in or modifications of the general method, which may be practiced without departing from the underlying feature of the invention.

Preferably I make use of a black-ground pattern, and as the best effects in producing a black ground are obtained by "resist" printing, I will first describe my new method in connection with such resist printing for the production of the black-ground pattern. The fabric in such case is first padded with the anilin-black-producing liquor and then dried. Any desired pattern or figures are then printed with a resist upon the fabric so padded, the fabric being run through a printing-machine for the purpose. The black is then developed by aging and the fabric treated in the usual way, producing a black ground with white figures. The fabric is then again run through a printing-machine and a color pattern printed thereon. The fabric is then steamed, washed, if necessary, and finished in the usual manner. By reason of the fact

that the color pattern is thus printed at a different passage of the fabric through the printing-machine than that at which the resist printing for the production of the white figures is done, the figures of the color pattern will not register with or fit the white figures. The figures of the color pattern therefore will come partly on the white figures and partly on the black ground, or it may be that some of the color figures will come entirely on the black ground. As the color figures will show only where they, or some portions of them, happen to come upon the white figures, it follows that only a portion or portions of each figure of the color pattern will show or appear on the finished fabric, the remaining portion or portions of the color figures being obliterated or concealed by the black ground. Furthermore, the portions of the different color figures which do thus appear on the white figures and in the finished fabric will not be the same portion or portions of each color figure, but will instead be varying portions of said figures. The result, therefore, is a printed fabric having a black ground with varying-colored or partly-colored figures thereon.

Thus, to take some simple patterns to illustrate the results of the process above described, suppose, for example, that the pattern for the resist printing and thus, for the white figures on the black ground, be composed of figures each consisting of a number of small polka-dots grouped together in the form of a circle, and suppose the color pattern to be composed of figures each of which is a solid or blotch figure in the form of a square, and, further, suppose this color pattern to be printed in red. In such case it will be noted in the first place that the red square of the color pattern would not coincide with one of the white figures, because the two figures are of different shape or outline, and that only so much or such portions of the red square would show as happened to come upon or overlie the round dots of the white figure. Not only this, but as the printing with the red square is done at a different passage of the fabric through the printing-machine than that at which the resist printing for the white figures was done the red squares

will not register with or fit the white figures. This variance or failure to register may be still further increased, if desired, by arranging the red squares with relation to each other in a different manner from the arrangement with relation to each other of the white figures. It follows that not merely will those portions only of the red squares show which happen to come upon the round dots of the white figures, but the portions of the white squares will likewise vary greatly. Thus suppose there to be, say, twelve polka-dots making up each of the white figures. As a result of the process described, one of the figures, which before the color printing were white figures, may have, say, all twelve of its dots colored red, another may have, say, eleven of the dots thus colored, another ten, and so on down, while still another may possibly have none of its dots colored, but all be left white as before the color printing took place; and so, also, it may and very often does happen that one or more of the dots in an original white figure will be only partly colored red, leaving the remainder of such dot in the original white; and, again, it may be that while the dots of one original white figure may all, or nearly all, be colored red in the finished fabric, the next adjoining figure may have only a portion, and perhaps a very small portion, of its dots so colored. Thus a very great variety of coloring and very striking and peculiar effects may be produced.

It will be manifest from what has already been said that the variation in the coloring and in the effects produced may be still further increased by varying the several patterns or figures or by using more intricate or complicated patterns, either in the case of the white figures or in the case of the color figures, or both. It will be readily understood that if the white figures be varied or be of a more intricate character than the simple group of polka-dots above supposed the variation in the coloring of such white figures by printing with the color pattern upon the fabric will be greatly increased. So, also, if the figure of the color pattern be varied or be of a more intricate character than the simple square supposed the variation in the coloring of the white figures will be on that account greatly increased, while if varied or intricate patterns be used for both the white and the color figures the variation in the color effects produced will be greatly multiplied.

Moreover, instead of using a color pattern all the figures of which are printed in the same color, the color pattern, whether of a simple or intricate character, may have its different figures or different parts of the figures printed in different colors. When this is done, the variation in the resulting effects is still further increased. This will be understood by referring again to the simple patterns hereinbefore supposed. Thus if the squares of the color pattern be printed some

in red, some in green, some in blue, others in purple, &c., it is plain that the coloring of the polka-dots of the white figures will vary much more than in case all the squares were printed in red. If the color pattern be composed of intricate or irregularly-shaped figures and the different figures or parts of figures be printed in different colors, as above suggested, still greater variations will be produced. For example, take the case of a fabric where each of the white figures is a group of twelve small polka-dots, as above supposed. If a color pattern of intricate or irregularly-shaped figures in different colors be printed on such fabric, it may be that in one of the original white figures two of its twelve dots, for example, will be colored red, one colored green, three colored blue, four colored purple, and two not colored at all, but left in the original white, while in the next adjoining white figure the coloring of the dots will be widely different. The great variety of striking effects that may thus be produced by the above-described method will be readily appreciated.

If a color pattern is employed in which different figures or different parts of figures are to be printed in different colors, as above suggested, such color pattern may and usually would be printed by the "fitting-pattern" method, so called, by the employment of as many different printing-rollers as there are colors to be printed, such rollers being so arranged and operated that the portion printed by each roller will fit the parts printed by the other rollers and the entire color pattern be printed at a single passage of the fabric through the printing-machine.

While it is preferred to make use of a color pattern composed of figures which are more or less solid or of blotch character, it is not essential that a color pattern of this character should be used, as the process is precisely the same, and similar effects may be produced if the color pattern be composed of what are known as "line" figures instead of blotch figures.

It will be understood that the printing with the resist may be either before or after the padding with the black-producing liquor.

While it is preferred, when the ground pattern is to be black, to produce this black-ground pattern by resist printing by reason of the well-known superiority of such resist-printing method for the production of black grounds, it will be obvious that, so far as my new method is concerned, it is immaterial how the black or other dark ground pattern is produced, whether by resist printing or by direct printing, and that, if desired, such black or other dark ground pattern may be produced by blotch printing the same directly upon the fabric.

Of course for the production of fast colors it is usually desirable to make use of a mordant to fix the colors. When employed, the mordant may be applied in any suitable man-

ner—as, for instance, by mixing the mordant with the bright colors before printing there-with and then printing with such mordant colors. When the black-ground pattern is
5 produced by resist printing, there are advantages to be obtained by mixing the mordant with the resist and then printing with such resist mordant. The employment of a mor-
10 dant, however, is in no way essential to the present invention, and it may be omitted altogether, if desired.

It is to be understood that the present invention is not limited to any particular order of steps in the performance of the process as
15 a whole, as the order in which the different steps are performed may be varied without departing from the underlying feature of the invention. Thus it is immaterial, so far as the invention is concerned, whether the dark-
20 ground pattern is first produced and the bright-color pattern printed afterward or whether the bright-color pattern is printed first and the dark-ground pattern produced afterward. Thus if the dark-ground pattern
25 is to be produced by resist printing it may be preferable to produce this dark-ground pattern first and then print the bright-color pattern, whereas if the dark-ground pattern is to be produced by direct printing it may be
30 preferable to reverse the order—that is, to print the bright-color pattern first and then print the dark-ground pattern.

The characteristic feature of the invention is that the figures of the bright-color pattern
35 do not appear in their entirety in the finished fabric, but only in fragments, portions of such bright-color figures being obliterated or concealed by the dark-ground pattern. It is immaterial, however, how this obliteration or
40 concealment is effected. Furthermore, while it is preferred to produce the bright-color pattern by printing the same upon the woven fabric, it is not essential that this should be done, as such bright-color pattern may be pro-
45 duced, if desired, by printing the same upon the warp-threads prior to weaving.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The method of printing fabrics which
50 consists in producing a black or other dark ground pattern on the fabric and also printing upon the fabric a pattern of comparatively bright color, the figures of which do not register with or fit the dark-ground pattern, whereby the figures composing the
55 bright-color pattern will not show in their entirety on the finished fabric, portions of such bright-color figures being obliterated or concealed by the black or other dark ground pattern, substantially as set forth.
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2. The method of printing fabrics which consists in producing a black or other dark ground pattern on the fabric and also printing upon the fabric a pattern of compara-
65 tively bright color, the figures of which are of different form or outline from the white

figures formed by the dark-ground pattern, and do not register with or fit the dark-ground pattern, substantially as set forth.

3. The method of printing fabrics which
70 consists in producing a black or other dark ground pattern on the fabric, and also printing upon the fabric a pattern of comparatively bright color, the figures of which have a different arrangement with relation to each
75 other from the arrangement of the white figures formed by the dark-ground pattern, and do not register with or fit the dark-ground pattern, substantially as set forth.

4. The method of printing fabrics which
80 consists in producing a black or other dark ground pattern on the fabric and also printing upon the fabric a pattern of comparatively bright color, the figures of which are of a blotch character, and do not register with
85 or fit the dark-ground pattern, substantially as set forth.

5. The method of printing fabrics which consists in producing a black or other dark ground pattern on the fabric and also print-
90 ing upon the fabric a pattern of comparatively bright colors, the figures of which do not register with or fit the dark-ground figure, different parts of such bright-color pattern being printed in different colors, substantially
95 as set forth.

6. The method of printing fabrics which consists in padding the fabric with a black-producing liquor, printing on the fabric a pattern with a “resist,” developing the black to
100 produce a black ground with white figures, and printing a pattern with comparatively bright color, the figures of which do not register with or fit the black-ground pattern, substantially as set forth.
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7. The method of printing fabrics which consists in padding the fabric with a black-producing liquor, printing on the fabric a pattern with a “resist,” developing the black to
110 produce a black ground with white figures, and printing a pattern with a comparatively bright color having a mordant mixed therewith, the figures of which bright-color pattern do not register with or fit the black-ground pattern, substantially as set forth.
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8. The method of printing fabrics which consists in padding the fabric with a black-producing liquor, printing on the fabric a pattern with a resist mordant, developing the black to produce a black ground with white
120 figures, and printing a pattern of comparatively bright color, the figures of which do not register with or fit the black-ground pattern, substantially as set forth.

9. A printed fabric having a black or other
125 dark ground and intervening figures of comparatively bright color, said bright-color figures differing in their coloring in an irregular and varying manner, substantially as set forth.
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10. A printed fabric having a black or other dark ground pattern and having printed

thereon a pattern of comparatively bright color, the figures of the two patterns overlapping or overlying each other in an irregular and varying manner, substantially as set forth.

11. A printed fabric having a black or other dark ground pattern and having printed thereon a pattern of comparatively bright color, the figures of which do not register with or fit the dark-ground pattern, and conse-

quently do not show in their entirety on the finished fabric, portions of said bright-color figures being obliterated or concealed by the black or other dark ground pattern, substantially as set forth.

THOMAS F. STIMPSON.

Witnesses:

R. A. BATES,

W. H. THURSTON.