Aug. 25, 1936. B. J. KELLY ET AL 2,052,350

PRINTING

Filed July 30, 1932

Fig. 1.

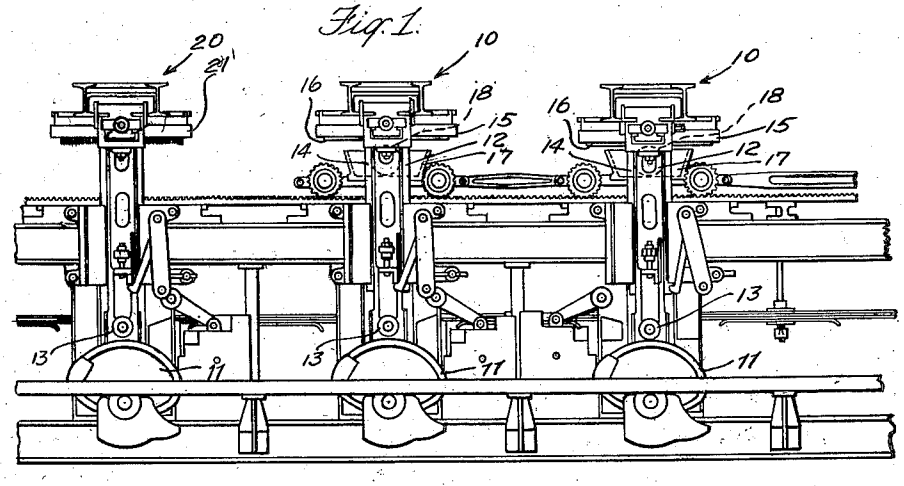


Fig. 2.

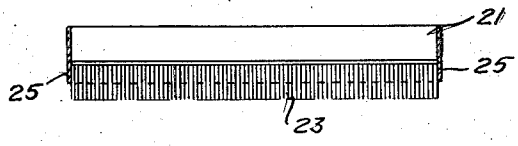
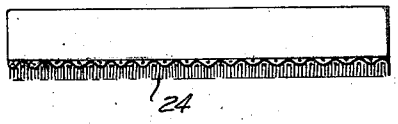


Fig. 3.



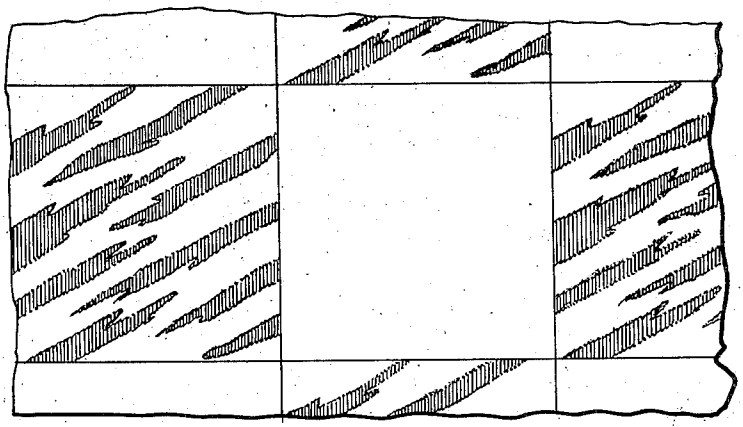


Fig. 4.

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PRINTING

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Application July 30, 1932, Serial No. 626,593

6 Claims. (Cl. 41—26)

This invention relates to printed goods and a method and apparatus for producing novel effects by block printing.

A common method of block printing roll goods, rugs, etc., and particularly floor covering materials, is to apply color (by which we mean to include paints, enamels and other liquid or semi-liquid colored coating compositions) by means of blocks, the faces of which are grooved or slotted in one or more directions so as to form ribs or pins upon which the paint is deposited and from which, in turn, it is deposited onto the goods which are to be printed. Very attractive designs can be made in this manner, but this method has heretofore been limited to designs in which there is more or less sharp definition of the various design portions, and designs such as imitation marble or marbleized patterns or designs in which one color shades gradually into another color or is blended gradually therewith have not heretofore been satisfactorily produced.

It is, therefore, an object of this invention to produce printed goods in which the designs are intermingled or blended so as to present novel patterns and decorative effects which could not heretofore have been made by block printing. It is a further object of the invention to provide a simple method and apparatus which will insure perfect closing in of the printed materials and leveling of these materials upon the printed goods.

With these objects in view, the invention contemplates applying print colors to the goods in the usual manner so as to form the designs at least roughly, and thereafter to produce the desired finished effect by pressing a brush block against the print materials while they are still in a fluid condition. The repeated pressing of the designs and the working of the fibres of the brush causes the colors to intermingle slightly within the brush and thus produces a softening of the borders and the blending of the colors and, furthermore, insures the closing in and thorough covering by the print materials for the same reason that brushing out of a paint when applied by hand would assure such result.

In the accompanying drawing, we have illustrated a preferred embodiment of our invention which will serve to illustrate the principle and mode of operation thereof.

Figure 1 illustrates a conventional type of block printing machine having a brush block thereon according to the present invention;

Figure 2 is a cross section of one type of brush block;

Figure 3 is a cross section of another type of brush block, and

Figure 4 illustrates one design which may be produced according to my invention.

Referring to Figure 1, we have shown there a conventional type block printing machine in which there are a plurality of units 10 each of which operates more or less independently upon a section of the material and each of which is a substantial duplicate of the others. These printing heads 10 consist essentially of a reciprocating mechanism, ordinarily a cam 11, a slide 12 having a cam follower 13 and mounted in the frame 14. Each of the slides 13 carries the printing head proper 15, to which is affixed the block 16 on which the design portion which is applied by that head has been cut. A paint pot 17 is associated with each printing head and carries a roller 18 which dips into the paint and serves to transfer a film of paint from the supply within the pot to the face of the printing block 16. These paint pots 17 are reciprocable longitudinally and are moved once during each cycle so as to pass across the face of the print block 16. A head 20 is provided which may be substantially the same as the heads 10, except that it has no paint pot and the print block 21 is a brush instead of a grooved or pin-faced block such as would be used for applying color to the surface of the goods.

The block may be mounted so that the bristles of the brush merely touch the surface of the color applied by the other blocks, or it may be adjusted to press against the goods sufficiently to flex the bristles slightly. In the former case only a slight blending action will occur whereas in the latter the flexing of the bristles will tend to work the colors laterally in the brush and thereby to cause a more thorough blending along the borders. The brush may be one having long bristles 23 (e. g. ¾ inch to 1 inch or even up to 3 or 4 inches in length) as shown in Figure 2, or may have short, very fine bristles as, for example, would be provided by a pile fabric 24 as shown in Figure 3, and the bristles may be closely spaced or may be somewhat separated. In the former case there is more tendency, when the brush has been filled with the color, to squeeze the color on the goods under the brush, whereas in the latter case the effect is more similar to that which is obtained by stippling with a hand brush.

Furthermore, the bristles may be stiff, such as are used in scrub brushes, etc., or may be soft fibres as in the case of a camel's hair brush or a pile fabric. The more the bristles flex during the brush-pressing operation, the greater will be the blending effect and consequently in cases where it is desired to produce a smooth and thorough blending the bristles will ordinarily be long or more flexible than in cases where a more irregular or rougher intermingling is desired.

Where the entire face of the goods is to be treated in this manner no special precautions need be taken to prevent brushing of parts by bristles which may become bent outwardly from the brush. In a design such as shown in Fig-

ure 4, however, it may be desired to confine the brushing effect to a limited area on the face of the goods and for this purpose side plates **25**, as shown in Figure 2, may be provided in order to prevent the edge bristles of the brush from being bent out from the limited area. If short bristles, such for example as are shown in Figure 3, are used this precaution ordinarily would be unnecessary.

In carrying out the invention the print colors may be applied to separate areas; or, as an overlay printing, one color may be applied to an area including more than that upon which it is to be exhibited in the final pattern and thereafter other colors may be applied over the first. In both cases the brush-pressing operation will serve to blend and produce a novel effect. In the latter case, the brush-pressing will also serve to level the colors to some extent. That is to eliminate the unevenness which results from the application of a double layer of color to certain parts of the design. In this case also the brush-pressing operation makes possible the use of block colors for the overlay as well as for the printing of the larger areas. This ordinarily is not considered practicable because of the tendency of the overprinted block colors to flood,—that is to say, to flow into or beneath one another with production of uncertain results.

In ordinary practice, the paints used for overlay printing are less viscous, less sticky and poorer flowing than "block colors". These characteristics are essential in the overlay paints in order to get a clean edged overlay configuration that will hold its shape. When block color is used for overlay printing, a ragged edged effect is obtained which rarely holds its initial shape and size; it usually either spreads over ("floods") the previously applied block paints, or sinks unders them. These usually objectionable features to printing overlays with block colors are not objectionable and may be highly desirable when brush mashing is being employed as it produces good blending of color-tones and fine intimate contrasts, and furthermore, it allows a color to be applied from a single printing block both as an overlay and as a non-overlay. This conservation of printing blocks or "heads" is most desirable, as it enables the maximum use of different colors and shades in pattern designing.

By block color is meant the color composition, whatever it may be, which is thus used in the field and major design areas. One example of a composition which has been commonly used for this purpose prior to our invention is

60% pigments and
40% vehicle consisting essentially of
20% varnish (approximately 12% mineral spirits as thinner)
80% linseed oil, kettle bodied to 4" (Gardner Holdt)

The pigments may be:—

10% zinc oxide,
45% lithopone,
45% inert material such as whiting or barytes.

In the case of overlay printing also the brush pressing may be regulated so as to mingle the color applied in the overlay design portions with the underlying color, and according to the choice of brush this blending may be more or less complete, or may be incomplete so as to produce irregular variations in the coloring of the pattern.

We have found it preferable, however, to use the so-called cut-out method of printing rather than the overlay method. That is to say; to print only one color upon any given area.

In Figure 4, we have shown one type of design which may be produced by and embody the present invention. The design illustrated is a marble tile pattern and the invention is particularly useful for the production of marbleized effects. It will be understood, however, that other effects may be produced which bear no simulation to marble or marbleizing, but in which a softening of the borders or a blending of certain parts of a design may be desirable.

From the above and the copending application Serial No. 730,897, filed June 16, 1934, it will be understood that the present invention is capable of wide variation in its application and that innumerable effects may be secured according to the wishes of the designer. Accordingly, the above is to be taken only as illustrating the manner of embodying and applying the invention and in no sense as limiting the invention to the particular embodiments disclosed.

What is claimed as new is:

1. The method of forming patterns which comprises depositing one color upon a design area of the surface to be decorated, depositing another color upon an adjacent area which is to form a design portion, and blending the colors at at least a strip along the border between said areas, by moving a brush from above the deposited colors toward the design area, pressing and then withdrawing it from the color thus deposited.

2. The method as defined in claim 1 in which closely grouped flexible fibres are used for brush pressing.

3. The method of decorating a surface which comprises applying liquid coloring material to the surface to be decorated with different colors appearing in different areas, and thereafter pressing the wet coloring material with a flat foraminous sheet held parallel to the decorated surface, whereby said coloring material is caused by said pressing to interflow, and is drawn up irregularly by said foraminous sheet when it is withdrawn therefrom and while the narrow openings thereof are being cleared of coloring material so as to permit access of air to break the suction.

4. The method of overlay printing which comprises printing one block color upon a spaced area, applying another block color by a single printing head to smaller design areas on those already printed and to other design areas not previously printed, and thereafter moving strand material from above the printed areas toward and dipping it into and removing it from the color on areas on which both colors have been printed, thereby to effect at least partial blending of said colors and terminate any tendency for one to flow out over the other.

5. The method of printing sheet material which comprises printing liquid coloring material upon said sheet material so that the different colors are exposed on different areas, and thereafter dipping a foraminous body formed of closely spaced strands into the wet coloring material and withdrawing the foraminous body from the wet color before any such movement parallel to the sheet material has occurred as would destroy the design configurations printed thereon.

6. The method of forming patterns which comprises depositing one color upon a design area of the surface to be decorated, depositing

one color upon an adjacent area which is to form a design portion and blending the colors in an entire area, including several design portions of different colors, by moving a brush from above the deposited colors toward the design area, pressing and then withdrawing it from the deposited colors.

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