

# UNITED STATES PATENT OFFICE.

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## ORNAMENTAL PAPER AND PROCESS OF MAKING SAME.

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No Drawing.

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*To all whom it may concern:*

Be it known that I, MANUEL A. T. GILLBEE, a citizen of the United States, residing at Philadelphia, Pennsylvania, have invented certain Improvements in Ornamental Paper and Processes of Making Same, of which the following is a specification.

My invention relates to the manufacture of coated paper, cards, cardboard, and the like; and one object of my invention is to produce an ornamental effect in color, and in various shades and tones of the same or different colors, upon the surface of paper, cards, cardboard, and the like.

A further object of my invention is to finish the surface of the color-coated material after the applied color has dried; such finish being effected by passing the color-coated material between rolls, or subjecting it to the action of presses or the so-called "platers," or imparting thereto a smooth, and in some instances a highly polished, surface capable of receiving the finest character of printing.

In ornamenting the surface of paper, cards, cardboard, and the like, in accordance with my present invention, I preferably proceed as follows: I take paper of any suitable stock and of substantially any color. To a certain extent, however, the color of the stock may control the color of the coating material applied thereto for the purpose of effecting the surface ornamentation, thus: dark colored coating bodies will usually be employed with dark stock, and light colored coating bodies with light colored stock, although, of course, the darker colored coatings may be applied to stock of substantially any shade or color. If, however, the body of the coating material is thick, showing that it contains considerable filling material or base, it may be employed in the lighter colors or shades to coat stock of dark shades.

The web, or sheet, of material is first passed through a coating machine from which it receives a water soluble ground coating of any desired color. The ground coating material is first applied to the surface of the paper, or cardboard web, by a suitable fabric apron, which moves with the web to the extent of its contact therewith. This apron may supply a light or a heavy coating, usually light, in any color desired, to form a ground. The coating material

generally employed is of casein or glue type, which may contain satin white, or clay, as a filler, or base, together with the usual pigment, or coloring matter.

Excess of clay will usually give a high polish to the surface of the paper after it has been subjected to the finishing action of the calender rolls and where this high polish is not desired, only a small portion of the clay, or other base, will be employed.

The means for applying the color coating consists of a plurality of rollers. Each roller may carry a different tone, or shade, of the same color, and, in some instances, each roller may carry a different color. The color-applying rollers have raised portions, or projections, whereby the coating may be applied thereby in a series of patches of irregular or indefinite area and the contour of the patches applied by one or more rollers may be arranged to register with or overlap the contour of the patches or areas of coating applied by one or more of the other rollers employed.

After the ground coating is applied, the rollers then supply the spots of coating in different colors or in different shades or tones of substantially the same color and a second apron will then be arranged to come in contact with the web, said second apron having the function of additionally coating the paper to a certain extent, softening or blending the coating, or coatings, previously applied. The use of this second apron may be omitted and, in some instances, the ground coat may be omitted and a surface coat may be applied.

From this second apron, or from the coating-applying rollers when the apron is omitted, the paper in the present instance passes to a plurality of brushes arranged for lateral movement with respect to the web and usually operated from opposite sides of the machine. These brushes are designed to soften and blend and substantially obliterate any line of demarcation that tends to display itself between the patches or other portions of the different shades or different colors of the coating employed, by reason of the manner in which the colored coating is applied to the surface of the paper web. These brushes may be of ordinary bristle type and in operation they are arranged to move at different speeds. Rotary brushes may be

used in some instances to obtain certain results.

As may be readily understood, the application of coating of one color or shade in spots or patches, which may or may not register with coating of another color or shade applied in other spots or patches, has the effect of producing an irregular ornamentation or coloring effect; light tones blending with darker tones of the same color, and light colors blending with dark colors, and other colors blending with or complementing each other; the areas or portions between the spots of greater color prominence being thinned to such an extent as to make it impossible to determine where one color or tone begins and another ends.

From the coating machine the sheet or web of paper, cardboard, &c., may pass to a drying room where it may be dried over bars, in festoons, in the usual manner. If one side or surface only is to be coated, it is ready for the final operation. If both surfaces are to be coated, however, the paper after receiving the first coating and being dried is wound in a roll so that the opposite surface may be coated in the same manner as the first. It will be understood, of course, that while the coating material on both surfaces of the paper or other material may be the same as to composition and method of manufacture, it may differ widely as regards color, shade, or tone, and the general design effected by the application of such colored coating in the manner described.

The coating material applied to the paper, cards, cardboard, and the like leaves a relatively rough surface, and being water soluble is more or less water absorbent. In the form presented after the coating and drying operations, it is not susceptible of employment for the better class of printing. To render the coated surface susceptible of receiving printers' ink and of developing highly artistic work, the coated web or sheet of paper, cardboard, &c., after the same is thoroughly dried, should have its surface smoothed or polished, and for this purpose it may be run between the rolls of a calendering machine, the effect of which is to condense or compress the coating and impart a high surface finish. In some instances, depending upon the character of the coating material, a polish is imparted to the coated paper or cardboard, which renders it susceptible of receiving the highest type of printing; whether from half-tones or type, or from steel and copper plates.

The coating material usually employed is of a water soluble nature. To render the same damp-proof and relatively moisture-repellant, a waterproof coating may be applied to the water soluble color coating before and after the same has been subjected to the crushing treatment.

This coating ornamentation may be applied to light or heavy stock, and may be employed for many purposes; the lighter stock being available for covering boxes and similar articles, and the heavier stock being available for cards, photographic mounts and covers, program covers, booklet covers, menu cards, mailing cards and the like.

I claim:

1. The process of imparting an ornamental surface finish to paper, cardboard, and the like, which consists in applying coating material in a wet condition to isolated portions of the surface of the same in different shades or colors, diffusing the coating after the same has been applied to cause different shades or colors of such isolated portions of the same to blend with each other, drying the coating, and then subjecting the surface of the coated web to pressure for the purpose of condensing or compressing the coating and the material receiving the same.

2. The process of imparting an ornamental surface finish to paper, cardboard, and the like, which consists in applying a ground coating material thereto, then applying color in a wet condition to isolated portions of the surface of the same, diffusing the coating and coloring after the same has been applied to cause different shades or colors of such isolated portions of the same to blend with each other, and drying the coating.

3. The process of imparting an ornamental surface finish to paper, cardboard, and the like, which consists in the separate application of coating material in different shades or colors to isolated portions of the surface of the same; the coating portions of one color or shade substantially registering with the coating portions of other colors or shades, diffusing the coating after the same has been applied to cause different shades or colors of such isolated portions to blend with each other, drying the coating, and then subjecting the surface of the coated web to pressure for the purpose of condensing or compressing the coating and the material receiving the same.

4. The process of imparting an ornamental surface finish to paper, cardboard, and the like, which consists in the separate application of coating material in different shades or colors to isolated portions of the surface of the same; the coating portions of one color or shade substantially registering with the coating portions of other colors or shades, diffusing the coating after the same has been applied to cause different shades or colors of such isolated portions of the same to blend with each other, drying the coating, and then passing the coated web through calendering rolls to compress and smooth the surface thereof.

5. The process of imparting an ornamental surface finish to paper, cardboard, and the like, which consists in applying a ground coating to the surface of the paper, applying coloring matter to isolated portions of the coated paper; then applying a surface coating, brushing the coated surface to cause the different shades or colors thereof to blend with each other, and drying the coated paper.

6. The process of imparting an ornamental surface finish to paper, cardboard, and the like, which consists in spot marking the surface of the same with a water soluble coating material in different shades or colors, brushing the coated surface to cause the different shades or colors thereof to blend with each other, drying the coating, and passing the coated web through calendaring rolls to compress and smooth the surface thereof.

7. The process of imparting an ornamental surface finish to paper, cardboard, and the like, which consists in spot marking both sides or surfaces of the same with a water soluble coating material in different shades or colors, diffusing the coating on the respective surfaces to cause the different shades or colors thereof to blend with each other, drying the coating, and then subjecting the surfaces of the coated web to pressure for the purpose of condensing or com-

pressing the coating and the material receiving the same.

8. The process of imparting an ornamental surface finish to paper, cardboard, and the like, which consists in spot marking both sides or surfaces of the same with a water soluble coating material in different shades or colors, diffusing the coating on the respective surfaces to cause the different shades or colors thereof to blend with each other, drying the coating, and passing the coated web through calendaring rolls to compress or polish the surfaces of the same.

9. As a new article of manufacture, ornamental paper, cardboard, and the like, having a surface coating with a clay base; said coating being in different shades or colors which have been diffused after application to cause the different shades or colors to blend with each other.

10. As a new article of manufacture, ornamental paper, cardboard, and the like, having a surface coating with a clay base; said coating being in different shades or colors which have been diffused after application to cause the different shades or colors to blend with each other; said paper, cardboard, or the like having its surface compacted and polished for the reception of printing.

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