

March 30, 1937.

A. E. TAYLOR

2,075,480

PATTERNED MATERIALS PRODUCED PARTICULARLY BY PRINTING

Filed Oct. 19, 1935

2 Sheets-Sheet 1

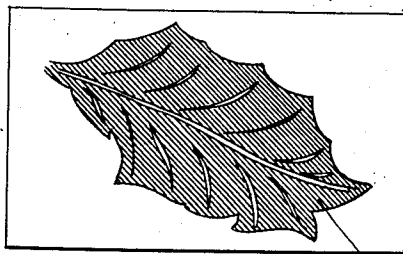
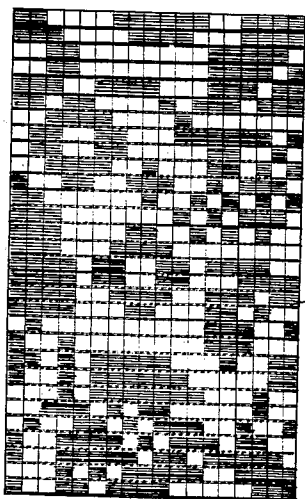


Fig. 2.

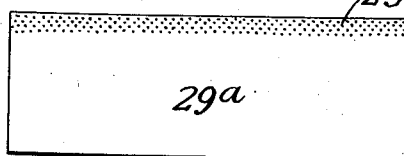


Fig. 1.

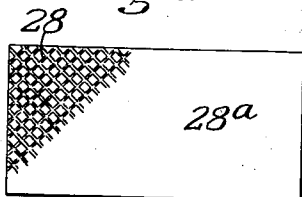


Fig. 3.

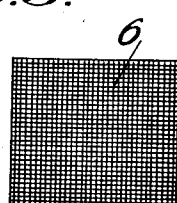
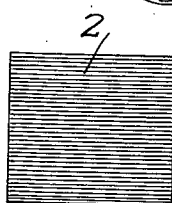


Fig. 4.

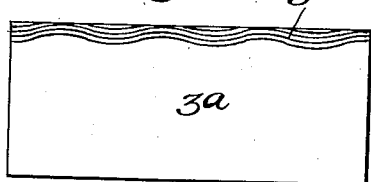


Fig. 5.

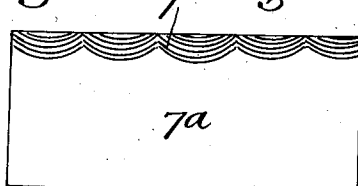


Fig. 6.

Fig. 7.

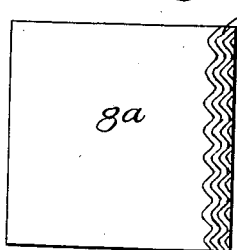


Fig. 8.

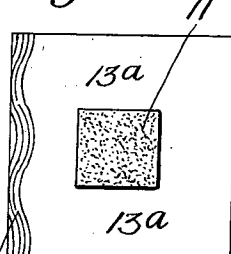
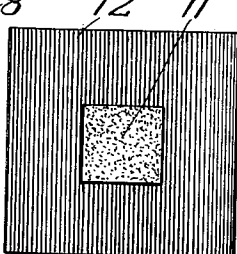


Fig. 9.

Fig. 10.

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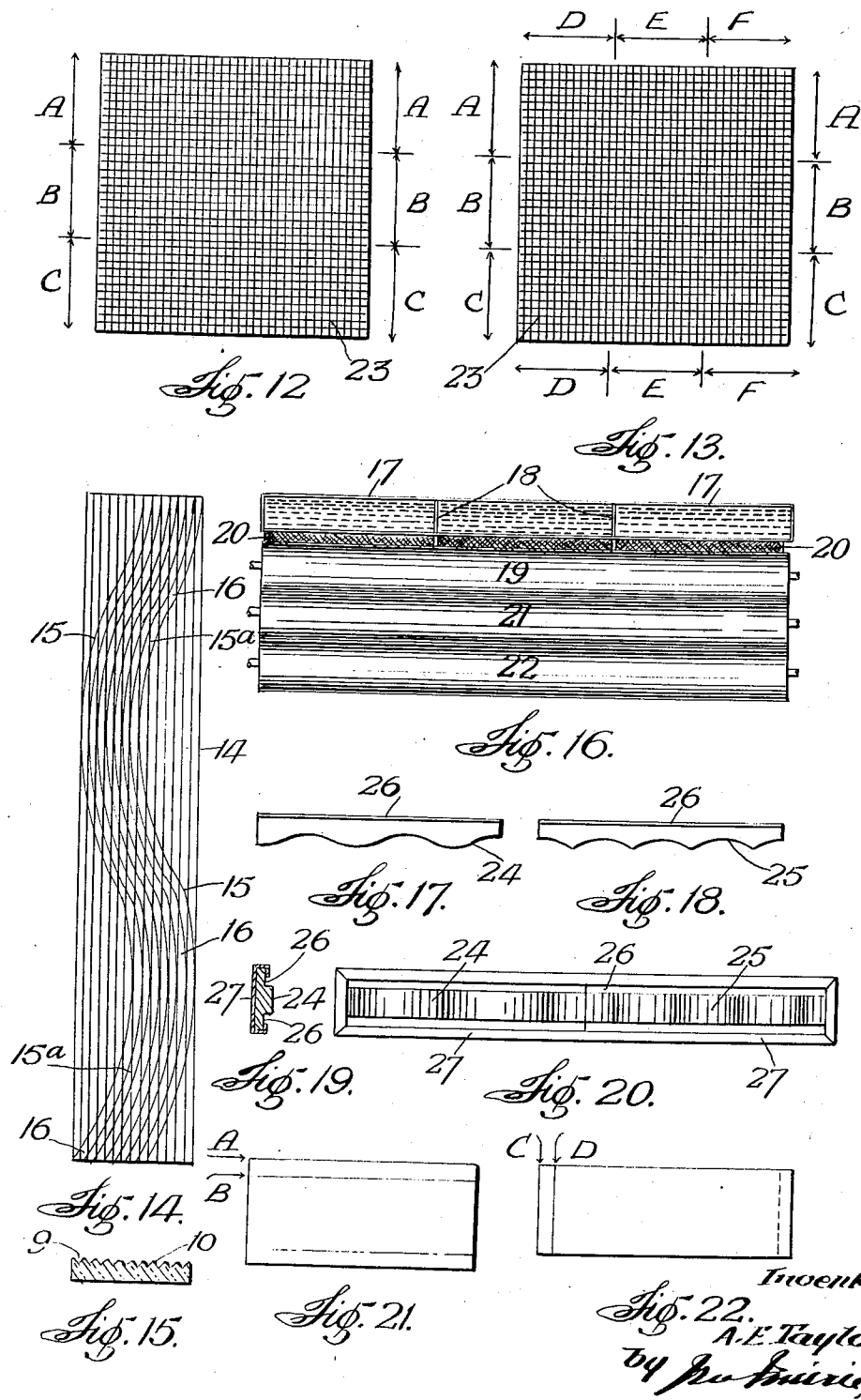
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2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

2,075,480

PATTERNED MATERIALS PRODUCED PARTICULARLY BY PRINTING

Aubrey Evelyn Taylor, Malvern, Melbourne,
AustraliaApplication October 19, 1935, Serial No. 45,804
In Australia March 6, 1934

2 Claims. (Cl. 101-426)

This invention relates particularly to box papers and the like bearing various patterns and designs, used for ornamentally covering cartons and the like, and to analogous materials and uses, and it has for one of its principal objects to produce numerous different printed patterns or designs without the necessity of preparing artist's drawings and printer's blocks, engraved sleeves for rollers or the like for each pattern or design desired. In ordinary printing the printer's blocks or other devices employed in producing a particular pattern or design are usually only useful for its specific production with the result that the number of available patterns or designs in stocks of box papers, for example, is limited as the demand is insufficient to warrant the expense entailed in producing an unlimited range by ordinary methods.

The invention aims particularly at reducing the cost of production of box papers, patterned cartons, show cards and the like to a minimum, by commercially practical methods and to provide simple and efficient methods of printing to produce representations of various articles and goods such as textiles, fabrics, laces, brocades and woven and knitted goods and to suggest, by printing, in the patterns obtainable, various different articles by the use of the same blocks or other printing devices.

The invention also has for its object to economically produce desired colour effects and contrasts in patterns or designs and to provide printed coloured patterns and designs by novel methods by which not only are numerous radical variations and different patterns obtainable without difficulty but economy in printer's ink is effected and the cost of production is in other ways very substantially reduced and the pattern produced is of enhanced value and appearance.

The invention also has for its object to produce numerous patterns and designs and colour effects by the use of the same printer's blocks, engraved sleeves for rollers and like devices and/or by the limited addition of further blocks or other printing devices and to obtain in some circumstances apparent colours or colour effects without printing such colours, the illusion being caused by the colours which are printed and/or their relationship. Stocks of printed papers and the like may be readily changed to other patterns or designs by over-printing. It, further, has for its object to provide for the economical production of varying engraved lines for use in producing patterns or designs in accordance with the invention.

The invention, further, aims at the application of colour printing without special process blocks or plates and it also aims at providing multi-colour printing in one operation in producing novel coloured patterns and designs. It also aims at appropriate embossment or rugosing of a surface printed in accordance with the invention, and in embossing or rugosing and printing in one operation in some circumstances.

Patterns or designs, printed in colours, may be prepared according to the invention to render copying by ordinary photographic methods impossible without detection. Coloured labels and other printed articles may be cheaply produced which are uncopyable by existing methods, and patterned effects may be so produced that they are substantially uncopyable without detection, by the methods which produced them.

By the invention, further, the representation of any particular or fancied articles, existing drawings, or subjects, such as flowers, may be incorporated in or produced as part of appropriate patterns or designs, produced by the invention, that is to say desired floral-like patterns or designs for example, produced according to the invention, may definitely include or represent, repetitively, or otherwise, any particular flowers or other known subjects or illustrations additively to the floral pattern which the invention would produce, or a pattern or design produced according to the invention may itself result in the production of the chosen flower or subject.

The foregoing and other objects and advantages of the invention and the methods or means of applying or carrying it into effect and its features of novelty generally will be in part obvious or pointed out and more clearly apparent from the following description from which it will also be apparent that although specific materials may be mentioned upon which printing is effected the invention is not generally limited thereto as it may be applied to paper, card-board, linen, leathercloth, tin plate and various other materials by appropriate variation when necessary.

Referring to the drawings:—

Figure 1 is a view of a curtain or material a representation of which, for convenience, it is assumed is to be incorporated in patterns or effects obtained in accordance with this invention.

Figure 2 is a view of a lined illustration which, for convenience, it is assumed is to be incorporated in patterns or effects obtained in accordance with this invention.

Figure 3 is a view showing a dotted line or

broken surface produced, for example, by the use of a ruled screen in a camera as in the half-tone process and which will inter-pattern with or become incorporated in patterns or effects obtained in accordance with this invention.

Figure 4 is a view showing a simple arrangement of engraved lines in type metal or wax cross cut to produce an arrangement of aligned dots.

Figure 5 is a view showing a simple arrangement of parallel straight lines.

Figure 6 is a view showing a simple arrangement of parallel straight lines crossed at right angles with a similar simple arrangement of parallel straight lines.

Figure 7 is a view showing a simple arrangement of parallel sinuous lines.

Figure 8 is a view showing a simple arrangement of parallel scalloped lines.

Figure 9 is a view showing a simple arrangement of parallel crinkly lines.

Figure 10 is a view of a printer's block bearing solid matter and a simple arrangement of parallel straight lines.

Figure 11 is a view of a printer's block bearing solid matter and a simple arrangement of parallel sinuous lines.

Figure 12 is a view showing a simple arrangement of parallel straight lines crossed at right angles and intended to be printed in a plurality of different bands of colour A, B, C by one impression of the printer's block.

Figure 13 is a view showing a simple arrangement of parallel straight lines crossed at right angles and intended to be printed first in a plurality of different bands of colour A, B, C, by one impression of the printer's block and then in a plurality of different bands of colour D, E, F, at right angles to the bands A, B, C, by another impression of the printer's block.

Figure 14 is a view showing parallel lines of different conformation or contour which when over-printed in suitable different colours cause a third unprinted colour to apparently appear in the interstices between the over-printed lines.

Figure 15 is a sectional view of a printer's block or die used for printing and embossing in one operation.

Figure 16 is a diagrammatic view showing a divided ink duct, feeding wicks and receiving, distributing and impression rollers of a printing press for the purpose of obtaining multi-colour printing at one operation.

Figure 17 is a view of one section of an engraving guide having a sinuous surface.

Figure 18 is a view of one section of an engraving guide having a scalloped surface.

Figure 19 is a cross sectional view of a frame in which sectional engraving guides are assembled.

Figure 20 is a front view showing sectional engraving guides assembled in a holding frame.

Figure 21 is a view showing that a printer's block may, when over-printing, be applied at a position upwardly or downwardly from its initial position, to cause crossing or interference between the printed lines.

Figure 22 is a view showing that a printer's block may, when over-printing, be applied at a position forwardly or backwardly or sidewardly from its initial position, to cause crossing or interference between the printed lines.

The invention includes the incorporation of suitable existing designs or patterns such as those appearing in selected fabrics, such as shirtings, curtains and the like where there are definitely

lined threads, a weft and a woof or the like, with patterns or designs which are produced by the application to a surface, such as paper, of a series of substantially parallel lines arranged vertically, laterally, or at any desired angle and of any desired contour, width, pitch or distance apart, colour or other characteristics, dependent upon the features of the pattern to be incorporated. By over-printing the arrangements of substantially parallel lines patterns or designs result as distinct from a lined appearance, and by variation of the relationship between the lines such as the angles at which lines cross each other different patterns will result. The printed lines may be dotted or interrupted or continuous and they may comprise suitable shapes or conformations instead of dots.

As an example presume a printer's block is made having a simple arrangement of parallel straight lines, such as 2, Figure 5, and another block is made having a simple arrangement of parallel sinuous lines, such as 3, Figure 7, the space indicated at 3a in Figure 7 is presumed to be occupied by a continuity of sinuous lines 3. By printing from one block and over-printing the lines thus obtained with the other block, provided the pitch or spacing and features of the lines are appropriate, a pattern is obtained which does not in the present instance resemble any of the lines and the pattern obtained will appear and be correspondingly repeated over the whole surface according to the number of times the lines cross each other. And by over-printing a printed representation of a selected fabric, curtain or the like such as 4, Figure 1, with either or both of the blocks referred to the selected pattern, such as 4, may be reproduced in conjunction with additive patterns, or entirely altered, because of the introduction of the lines of the selected subject, provided of course that the spacing and features of sufficient lines of the selected subject are appropriate. To angularly print over a lined surface it may be returned to the printing machine and over-printed at an angle to the printing device that is the printed surface may be applied to the block at an angle when the over-printing is being made, or the lay may be altered. In the simplest of cases a pattern or design may be obtained by over-printing in this manner with the same printer's block the character of the pattern being dependent on the line arrangements of the block and their angular relationship when over-printed but it will be quite distinct and definite and will not appear as a mere arrangement of intersecting lines. Over-printing may also be effected at an angle to any of the blocks used when multiple patterns are being formed, that is when several arrangements of lines are over-printed.

The motive or selected designs to be incorporated in the pattern produced by over-printing appropriate parallel or substantially parallel lines need not, of course, represent a fabric. The line shaded leaf 5, Figure 2, for example, would inter-pattern with pattern forming lines having appropriate pitch or spacing, contour or the like, thereby forming additive patterns without eliminating the said motive. As another example presume a print is obtained from a right angular straight lined block, such as that indicated at 6, Figure 6, and is angularly over-printed with a right angular sinuous lined block the lines of which are of relative or suitable pitch the result will be a lace-like effect in a wavy round-like pattern repeated on the sheet as often as the lines are crossed or interfere with each other and an-

other different pattern may be obtained simply by varying the angle of the over-print, that is the angle between the line printed surface and the block when the second or over-printing is made.

Obviously a right angular sinuous lined block may consist of sinuous lines, such as those indicated at 3, Figure 7, crossed at right angles by similar lines. When the pattern obtained is incorporated with a printed representation of an existing curtain, for example, of suitable design and mesh, by over-printing, the pattern of the curtain by inter-relationship with the over-printed lines may form new patterns without losing its identity. But angular relationship between the surface being printed and the blocks is not always necessary to obtain the requisite line crossings or interferences. A straight lined block having simple lines in one direction, such as those shown at 2, Figure 5, as stated in the first example, when used with the lines horizontally to over-print a surface printed from a block having sinuous horizontal lines, such as those shown at 3, Figure 7, will produce a pronounced wavy pattern which does not resemble the sinuous lines. Variations may also be obtained when over-printing by re-applying the surface to be over-printed to the same block so that the lines do not register. The number of different patterns obtainable from a few blocks bearing simple lines is remarkable, scalloped lines are shown at 7, Figure 8, for instance, and patterned effects obtained by the use of scalloped lines are entirely different to those obtained by the use of corrugated lines. The space indicated at 7a in Figure 8 may be presumed to be occupied by a continuity of scalloped lines 7. The colour effects obtainable by over-printing with appropriate lines in different colours are surprising. Sinuous lined blocks mentioned in the above examples may also be used individually or in conjunction to produce other than lace-like patterns by varying the printing angles as above indicated and by using blocks having sinuous lines the corrugations of which are of different length or pitch. Blocks having comparatively complex line patterns thereon and different line contours, such as waved lines to represent sea waves, irregular waved surfaces and the like, and complicated line designs may of course be used: simple lines have been referred to herein for clearness but by the use of appropriate lines in appropriate relationship, perspective-like effects may be obtained, that is the patterned effect may comprise formations having three dimensions in appearance. An engraver when preparing an original lined block may also obtain varied effects by varying the starting point of each or any of the lines and the term "substantially parallel" used in this specification is intended to include such variations. References in this specification to printers' blocks are, of course, to be considered as including any appropriate printing device, such as the engraved sleeves carried by rollers in some classes of printing.

In the imitation of knitted goods, hosiery and the like, crinkly and/or broken lines, such as those indicated at 8, Figure 9, whether used in plain parallelism or crossed at right angles or otherwise, will, by over-printing in conjunction with straight lines or in conjunction with crossed or other sinuous lines of appropriate spacing or pitch, produce step-like straight or waved patterns resembling or strongly suggesting such goods and be accordingly very useful with appropriate printed matter and in illustrations of

knitted goods, hosiery and the like. In Figure 9 the space indicated at 8a may be presumed to be covered with a continuity of the lines 8.

Patterned paper printed by lined blocks in the manner herein indicated is particularly useful for covering cartons and the like and printed stocks of papers may always be changed to a different pattern simply by an additional printing with one of the blocks already used in its production, applied at an appropriate angle or applied to appropriately intersect the printed lines or by the use of another appropriate block. Such papers also may possess an appearance of texture and if necessary may be roughened or grained by known apparatus to enhance their appearance, particularly when textile goods are being imitated and the graining, roughening or the like may be such that the patterned surface then approximates to the eye the surface of the material which the pattern suggests or resembles. Under some circumstances patterned paper printed in the manner herein indicated may be embossed with arrangements of lines of appropriate pitch, conformation and other characteristics. An embossing block or die having V sectional grooves indicated at 9, forming parallel ridges or embossing lines 10, is shown in cross section in Figure 15. The embossing block or plate may be first inked, that is its ridged or lined surface may be inked before use as an embossing device, it then functions in the dual capacity of a printing and embossing device. Embossing, however, must be made with due regard to circumstances and results required as in some instances it is not desirable but when used it may be such that the surface of the material or subject suggested by the pattern is approximately resembled or suggested as above mentioned.

In some circumstances, such as when a line printed surface forms part of a block bearing solid matter or illustrations, it will not be practicable to angularly over-print to obtain line patterns in the manner hereinbefore indicated as exact registration of the solid or illustrative matter will be required in successive impressions. A second or additional block, however, may be used having the lines desired at the required angle so that when the line printed portion of the surface is over-printed by the second block the desired pattern will be formed by the over-printing operation without de-aligning matter which requires exact registration. In Figures 10 and 11 illustrative matter which requires exact registration is indicated at 11. Straight parallel pattern forming lines are indicated at 12 in Figure 10 and parallel sinuous lines at 13 in Figure 11. The space 13a may be presumed to be occupied by the lines 13. Obviously when the one block is over-printed by the other lines 12 and 13 will form the desired pattern. The position indicated at 11 could be open or vacant in one block when over-printing of the illustrative matter 11 is not desired. When printing ordinary illustrations in two or more colours with line patterns in accordance with the invention added as backgrounds, for example, or vice versa, the usual colour blocks used may obviously carry desired lines at varying angles in accordance with this invention so that when successive impressions are made to print the coloured illustration the lined patterns desired will be formed by the crossing of the pattern forming lines of each block. This is very obvious from Figures 10 and 11 if the solid or illustrative matter 11 is considered as a different colour process block in each of the Figures 10 and 11, for

instance, one as a "red" block and the other as a "blue" one.

In printing in colours according to the invention additional illusory colours may be caused to appear which are quite definite and form patterns or designs. In simple explanation of this phenomenon it may be assumed that vertical lines 14, Figure 14, have been crossed by sinuous lines 15 of similar spacing. Formed between the crossed lines or at the intersection thereof are open spaces or interstices indicated at 16. Now if the lines are printed in certain colours the interstices, which are unprinted, will appear to the eye to be coloured. For example if the vertical lines 14 are printed with a violet ink on a white surface and over-printed with black sinuous lines 15 the interstices 16 will appear to be coloured yellow. That portion of the vertical lines, indicated at 15a, which is located between the sinuous lines of course remains violet with the result that the printed illustration appears with vertically zig-zagged lines or bars of violet and black between which are laterally located formations or bars of yellow. In coloured patterns or designs formed in the manner herein described it is therefore obvious that under some circumstances colour effects will be obtained without actually printing some of the colours which appear to be definitely present. Illusive colours obtained in this manner and by the relationship between lines of different colour may also appear as tinges of colour, a glow, haze and/or as a complementary effect.

To cheaply obtain colour effects suitable to certain conditions or circumstances multi-colour printing at one impression may be practiced. By multi-colour printing at one impression is meant the application at one time of a plurality of bands of different colours across a printer's block so that the surface printed is coloured with a plurality of bands of different colours by one impression of the block. A block may be inked with a multiplicity of bands of different colours at one time by the introduction into the printing machine of separate peripheral ducts or channels for the several colours. For example, Figure 16 shows diagrammatically, that the ink duct 17 of the printing press may be provided with sliding or other adjustable partitions 18 adapted to divide the duct into a series of compartments. The duct or receiving roller 19 of the machine may be fed by wicks, rollers or other suitable means 20 with a differently coloured ink from each compartment a series of bands of coloured ink being thereby conveyed to the distributing roller 21 and impression roller 22 and then to the block. The distributing and/or impression rollers 21, 22 may be formed with peripheral slotways or channels of the width of the colour bands desired to prevent undue spreading of the ink bands but a clearly defined line between the colour bands is not essential with this invention in this kind of printing. Any oscillatory movement of the rollers present in existing machines would be removed by eliminating or disconnecting the oscillating gear or making obvious re-arrangement. But whatever specific arrangements are made they must also be such that the block inking or impression roller 22 receives a series of separate peripheral bands of different coloured inks which it transfers to the block. For example, three bands A, B, C, of different coloured inks may be presumed to have been applied laterally across the surface of a block having right angular crossed straight lines, indicated at 23, Figure 12.

The printer's block having its lined surface inked in this way would produce a right angularly lined printed surface with its lines printed in three different coloured bands at one impression. Now if this lined multi-coloured surface is returned to the block and over-printed at an angle thereto the lines will be caused to cross each other a number of times dependent upon the angle. In the resultant printing the coloured bands will be patterned by the original colour of the surface, white for example, with intensification of the colours of the bands at the interpositional points of interference of the lines. A dappled effect would be obtained in the present illustrative instance and because of the crossed lines the surface would possess an over-all texture-like appearance. The patterns obtained in this way, of course, depend upon the contours of the lines and the number of times the pattern is repeated depends upon the number of times the lines cross each other. When a square surface is being printed it may, before being angularly over-printed to produce pattern, be returned to the block at right angles thereto and over-printed to produce the coloured bands at right angles, as indicated at D, E, F, Figure 13. The surface now obviously possesses a different colour arrangement and may now be returned to the block at an angle thereto to obtain a patterned effect. Obviously a multi-coloured surface may be over-printed by another block having any other desired arrangement of lines and motives or desired subjects such as those indicated in Figures 1 and 2 may be introduced in multi-colours or otherwise. The variations in colour effects and patterns obtained are very numerous from a few different arrangements of lines having pitches or spacing which will co-relate.

Obviously, in some circumstances, in the application of the invention on a commercial scale to produce printing blocks having parallel lines thereon of different contour it will be necessary in engraving each original block or plate to use a guide for the engraving tool corresponding in contour to the line desired. To overcome the necessity of manufacturing a fresh guide for each contour desired a sectional guide may be used, according to this invention. For example, in Figure 17 a guide section is shown having a sinuous guiding surface 24. In Figure 18 a scalloped guiding surface 25 is shown. The guide sections may be provided with retaining flanges 26 or the like. A number of inter-changeable guide sections, therefore, obviously may be manufactured or produced, the guiding surfaces of which may vary. To produce a guide for the engraving tool sections of desired contour are selected and assembled in a suitable holding frame or the like, such as that indicated at 27, Figures 19 and 20. By interchanging and varying the positions of the sections innumerable guides having different guiding surfaces may be readily produced and innumerable lines of different contour may consequently be engraved without incurring the expense of an integral unchangeable guide for each line desired, as at present.

In some circumstances lined blocks or blocks having patterns thereon lined either wholly or in part may be prepared by photographing existing materials, such as lined shirtings or other textiles and the like, the warp and weft of which may be utilized advantageously and these blocks may by over-printing produce patterned effects. Laces and curtains also may be used. An engraved line infers a clear cut line but it may be an advantage and of benefit to a final pattern

or effect for some of the lines or portions of the pattern to be less distinct or blurred or softer. Effects of this nature may be cheaply obtained by photographing an existing pattern or line arrangement out of focus and preparing a block from the photograph.

Blocks prepared for printing large sheets of material, particularly for the manufacture of cartons, may include several groups of arranged lines on the one block so that a sheet may be printed in sections, if desired, and the same pattern will occur in each section.

In using any of the blocks in producing line patterns by the methods herein described a block after initial printing may be used to over-print out of register with the lines already printed by it as beforementioned. This may be effected by applying the sheet or print to the block at a point forwardly, backwardly or sidewardly of the point at which it was first fed or applied, or by moving the block up or down or sidewardly slightly from its original position in the printing machine, or by applying the printed sheet at an angle to the block when over-printing, or even by reversing the block in some circumstances, and by altering the lay. For example, in Figure 21, a sheet printed at the initial position A from a block bearing pattern forming lines, if re-applied for over-printing at position B would receive an impression the lines of which would not register with those of the first impression. And similarly application of the line printed surface at the successive positions, C, D, Figure 22, would cause such de-registration, angular crossing and interference between the lines of successive impressions that the desired pattern forming relationship would be obtained. Diagonal movement of the line printed sheet in relation to the block in addition to forward, backward or sideward positioning, when over-printing, may also be made to obtain different patterns from the same block and/or variation in the pattern obtainable, with each different position.

In the production of material, such as box papers in particular illustrations, pictures, designs or patterns representing definite flowers, articles, trade-marks and the like may be desired. To incorporate representations of any article or the like as part of appropriate patterns or designs produced according to the invention the article, drawing, or the like when it does not comprise definite substantially parallel lines on its surface, may be photographed through suitable screens of a mesh or pitch, angle, and the like, dependent on the result desired, to break up the solids and produce a picture having a dotted or other broken surface analogous, for example, to that of half-tone prints, with the lines or lines of dots spaced apart to co-relate with the pitch of the lines to be over-printed upon them. A subject which does not bear lines suitable for the purposes of this invention may, therefore, be photographed through a half-tone screen and then enlarged so that the spacing of the half-tone dots corresponds or approximates the pitch or spacing of the pattern-forming lines with which the subject is to be over-printed, or vice versa. Glass sheets or the like bearing lines appropriate to the lines by which the picture or the like is to be over-printed may therefore be used as screens in the photoengraver's camera to produce or apply to pictures or the like characteristics whereby they become suitable for use with line pattern forming blocks according to this invention, when they are not ordinarily suit-

able. A block may be made having its dotted or broken surface enlarged up for example to correspond with the pitch of the lines by which patterns are formed in the manner before described. By printing from the block the particular article or subject is represented, in appropriate but probably coarse appearance, in which the lines and/or dots by which it is now composed are all clearly seen. When, however, it is over-printed with appropriate arrangements of substantially parallel lines having desired contour, pitch, colour and other characteristics the lined and/or dotted appearance will be crossed by the over-printing lines and co-operate therewith in forming in some circumstances fresh patterns, additively to those normally formed by the pattern forming lines themselves, but the representation of the article will be clear and distinct through the patterns formed by the over-printing lines. When repetition of a subject is desired on one sheet resort may be made to what is known to photo-engravers as "stepping-up". The article then is separately photographed the necessary number of times upon the one negative the exposures or representations obtained therefrom being arranged in line or otherwise, dependent upon the general arrangement desired.

When representations of textiles, having lines of weft and woof, fabrics of various descriptions, knitted goods, curtains and the like, see Figures 1 and 2 for example, are to be incorporated in patterns according to the invention a block may be prepared of the article with the mesh or lined features thereof enlarged or reduced to a pitch or spacing which will co-relate with the lines by which it is to be over-printed as hereinbefore indicated. From the block a print is made and this is over-printed by suitable arrangements of lines which by their crossing and arrangement over the lined features of the representation of the article produce harmonious over-lying patterns of desired character without necessarily obliterating or unduly reducing the prominence of the original representation. Fabrics or the like may be arranged in folds, or stretched or distorted or otherwise arranged so that even though a copyist discovered the article or fabric originally photographed it would be impossible for him to obtain the exact folds, distortions or the like and therefore impossible to produce exactly the ultimate pattern or effect. Further, by photographing in or out of focus or partly so and using suitable ruled screens bearing lines of appropriate contour, spacing and the like, the screens being used angularly or otherwise, during the photographic process, very desirable effects may be obtained when the fundamental and over-printing lines are printed in colours, which cannot be imitated without detection. Obviously when a manufacturer desires illustrative matter, representations of special goods and the like to be incorporated they may be inter-patterned in the manner above indicated without material expense. Printing in solid form on material patterned in accordance with the invention may in some cases detract from its appearance and beauty whereas if the additional printed matter is produced in appropriate line or half-tone form it will inter-pattern or inter-mingle with the pattern-forming lines pleasingly and with satisfactory and interesting prominence.

From the foregoing it will have been perceived that any matter printed from half tone blocks, that is where screens have been used in the

producing camera, may be made inter-communicable with various lined blocks which have been prepared to produce patterns by over-printing. It is only necessary to enlarge or reduce the printed half tone matter so that the dots of its surface are related in spacing to the spacing of the lined pattern producing blocks with which it is to co-operate. In Figure 3 a dotted or half tone surface of this kind is indicated at 29. The space 29a may be presumed to be occupied by the dots or dotted lines 29. And any existing materials, illustrations or drawings may obviously be photographically reproduced by half-tone processes. Further, two screen produced photographs of any matter or subject may be taken at varying angles through the screen and then be produced each in a different colour as the dotted surfaces which are in effect dotted lines so far as this invention is concerned, will inter-relate or cooperate. And a screen photograph of a lined subject or article may include more intricate designs or patterns or appearance by the methods above described and thereby obviate the necessity of multiple over-printing. Lines of desired contour and other characteristics may be produced on glass or the like according to this invention and used as photographic screens as before mentioned.

Still further, to obtain variations in the effects produced, photographing out of focus may be resorted to as before-mentioned. In some circumstances photo-engraver's screen produced matter may be photographed through glass having a wavy surface or the matter being photographed may be arranged on a wavy or irregular surface. And screens through which photographic exposures are made may be of any desired mesh and formed of material other than lined glass or be used between sheets of glass when precision is not necessary, to produce effects which will co-relate or co-operate with the ultimate over-printing or over-printed lines to obtain novel and desired effects. Also, when engraving a plate having substantially parallel lines from which to prepare blocks for over-printing a roughened, sand-blasted or like surface may be used to obtain variation of textured appearance in the ultimate printed patterns produced. Again engraved lines may be produced in type metal, wax or other suitable material and be cross cut at suitable angles thereby leaving an arrangement of aligned dots, as indicated at 28 in Figure 4. In Figure 24 the space 28a may be presumed to be occupied by the dots 28. The dotted arrangement may be produced by known electro methods and a print taken and a positive made thereby producing an arrangement of crossed lines in printing, any or all of which may obviously be usefully employed in producing the necessary printing blocks and therefore in the ultimate production of the innumerable patterns and design variations and effects obtainable.

It has previously been mentioned in this specification that a patterned surface printed in

accordance with the invention may be appropriately embossed or rugosed. The object of embossing or rugosing the printed patterned surface with substantially parallel lines of embossment having appropriate contour, pitch or other characteristics may be either to impart a finished surface or appearance or to cause apparent colour and other changes and/or movement in the patterns as the view-point is changed. Instead of embossing a patterned surface after printing, further, crimped grained or existing roughened papers or material may be printed upon, in some circumstances, in accordance with the invention with sufficient pressure to obtain satisfactory patterned effects without removing the grained rugosed or roughened surface from the material. Further, instead of embossing or rugosing the surface but with similar objects in view, in some circumstances the patterning lines may be printed with a suitable resinous or other ink which when heated swells and upstands above the surface. The invention, therefore, includes the use of such inks and the subsection of the printed surface to heat, such as by means of a heated roller or rollers or the like, if necessary.

Photo-engravers, further, will realize that transparencies bearing pattern forming lines according to the invention and glass screens similarly lined may be used to print direct on to the sensitized plate when preparing blocks in some circumstances. A plurality of transparencies each bearing appropriate pattern forming lines may be super-imposed to produce the desired pattern and the super-imposed transparencies may be used as a negative to print direct on to the sensitized surface from which the printer's block is formed, under some conditions.

I claim:

1. Improvements in and relating to patterned materials produced by printing, consisting in distorting an existing textile having a design thereon, photographically reproducing the design of said distorted textile on a printing plate, printing from said plate on a sheet, and over-printing the initial representation at least once with arrangement of lines having such relationship with the initial printing as to produce patterned effects additive to that of the initial printing without unduly obliterating it.

2. Improvements in and relating to patterned materials produced by printing, consisting in distorting an existing textile having a design thereon, photographically reproducing the design of said distorted textile on a printing plate, printing from said plate on a sheet, and over-printing at least twice with one of such over-printings being of the initial representation, the over-printings providing an arrangement of lines having such relationship with each other and with the initial printing as to produce patterned effects additive to that of the initial printing without unduly obliterating such initial printing.

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