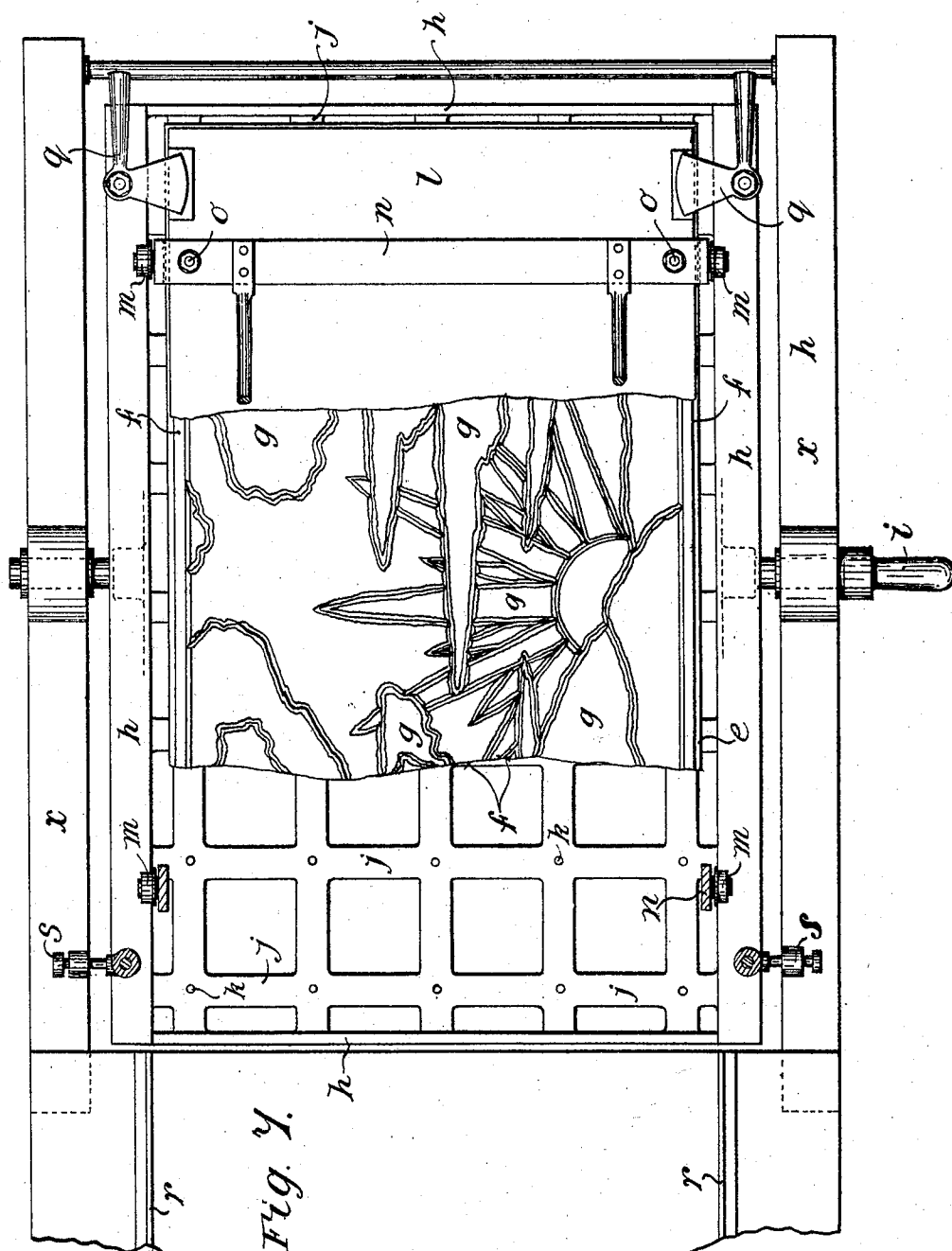


No. 800,152.

PATENTED SEPT. 26, 1905.

G. R. HILDYARD.
MULTICOLOR PRINTING.
APPLICATION FILED MAR. 17, 1903.

3 SHEETS--SHEET 1.



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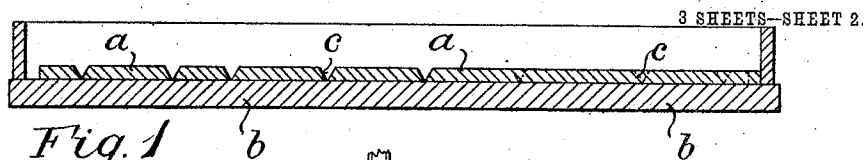


Fig. 1



Fig. 2.

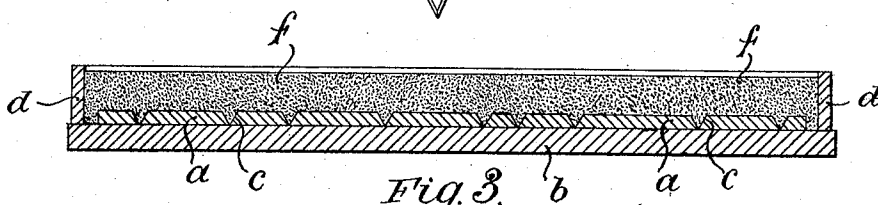


Fig. 3.

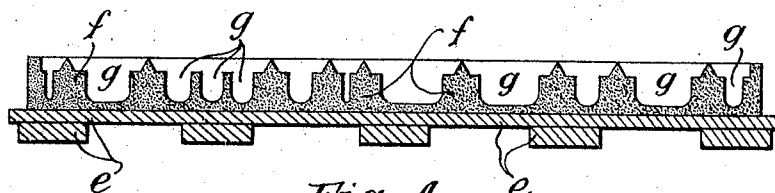


Fig. 4.

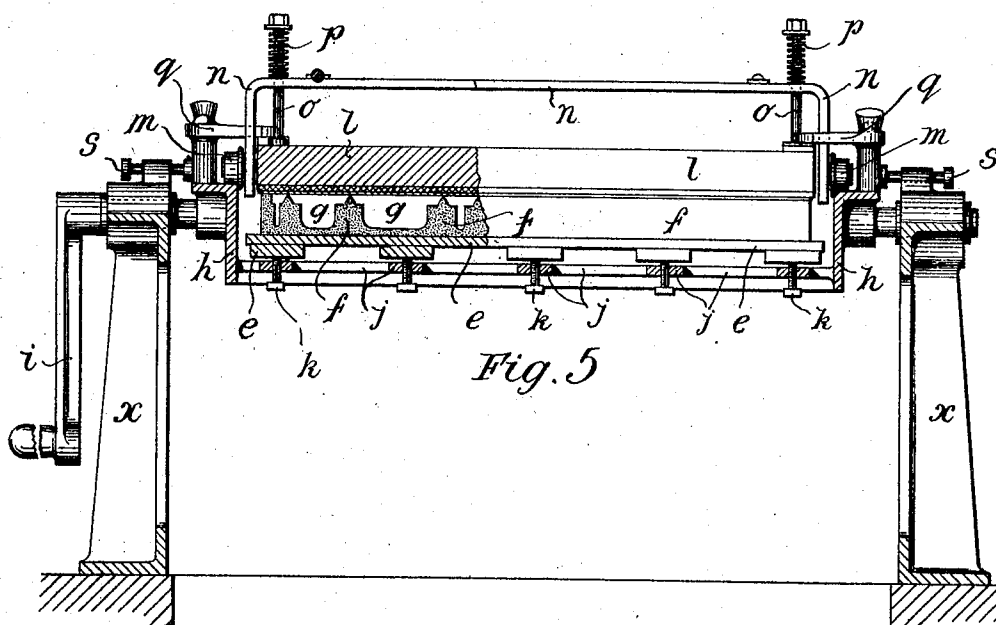


Fig. 5

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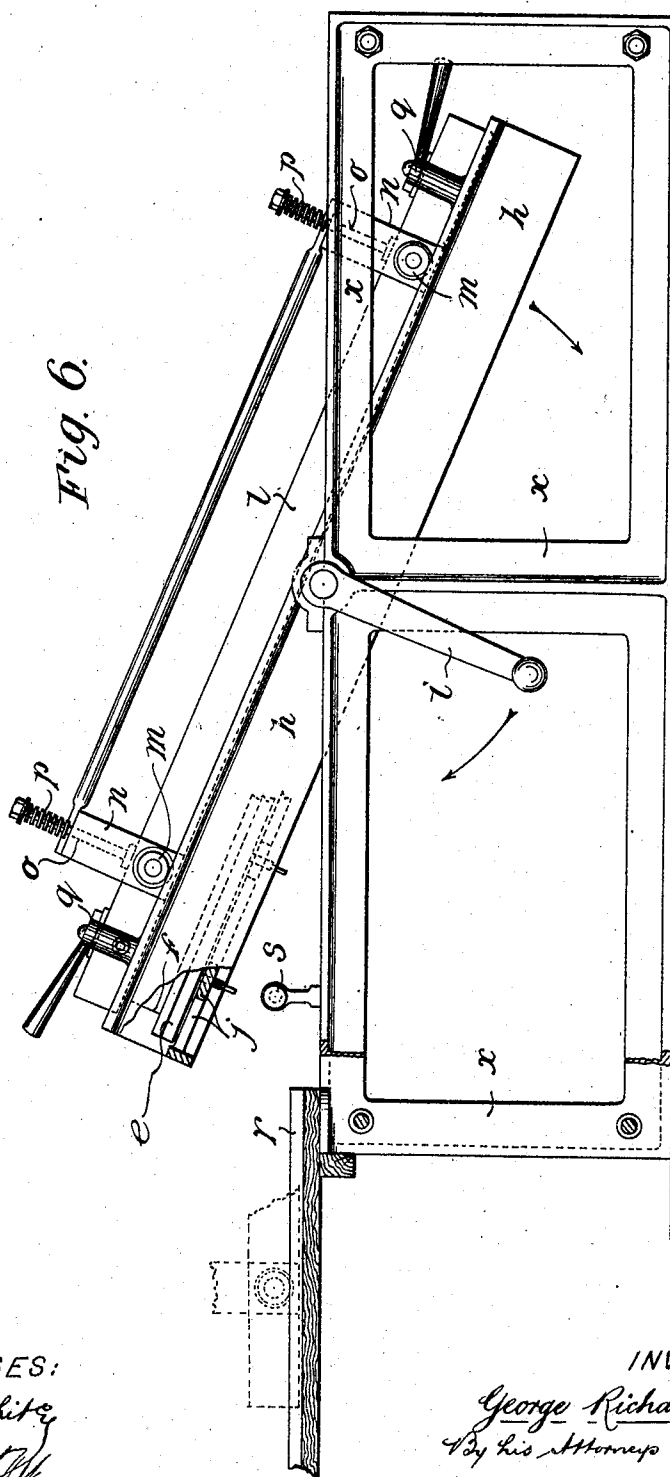
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3 SHEETS—SHEET 3.

Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE RICHARD HILDYARD, OF LONDON, ENGLAND.

MULTICOLOR-PRINTING.

No. 800,152.

Specification of Letters Patent.

Patented Sept. 26, 1905.

Application filed March 17, 1903. Serial No. 148,172.

To all whom it may concern:

Be it known that I, GEORGE RICHARD HILDYARD, color-printer, of 2 Baronsmere road, East Finchley, London, England, have invented certain new and useful Improvements in or Relating to Multicolor-Printing, of which the following is a specification.

This invention relates to multicolor-printing apparatus.

10 It has been proposed to form a multicolor-printing apparatus of a box-like receptacle which is divided into sections by means of vertical walls of material such as leather, paper, &c., which material is bent to the pattern or to the particular shape of the section allotted to each color. Separate colors are placed in each section and the paper which has been printed with an adhesive ink is placed on top of the box and the whole is then inverted or agitated, so that the color will fall onto the printed side of the paper and then fall back again into the section when the box is returned to its proper position, a portion of the color adhering to the printed matter and effecting the printing operation of a different color for each section. It will be apparent that only severe and somewhat well-defined patterns can be treated by the above apparatus on account of it being necessary to bend the wall to the pattern and then fasten same.

15 It is the object of this invention to provide a sectional color-printing block or tablet and method of manufacturing same whereby divisions between the sections of coloring-matter may be made with much greater ease than as above described, and also adapted to work of a much finer nature or work having a less-defined pattern, while at the same time obtaining an increased efficiency of the printing operation.

20 According to this invention the walls of the color-sections are first carved, delineated, or marked out by a tool whose cutting edge is of a form corresponding to the cross-section of the surface edges of the dividing-walls. The tool may be used to carve a slab or plate of soft material from which the tablet is cast, or the surface of the tablet itself may be carved, the shape of the tool being correspondingly reversed. A block or tablet is thus formed having the outlines of the sections for each color inclosed by raised walls of suitable cross-section and height so as to leave intervening spaces, in the floor of which spaces I form one or more holes, depressions,

or receptacles of suitable depth and dimension adapted to hold or be fed with powdered or liquid color for the purpose of printing in the manner set forth. The shape and position of the holes, depressions, or receptacles will vary according to the dimensions of the sections in which they are formed and may cover practically the whole or, if required, only a portion of each section.

The accompanying drawings illustrate the improved printing-tablet and the manner in which it is made and used.

Figure 1 is a cross-sectional view of a carved slab from which the tablet is molded. Fig. 2 is a view of a tool employed in carving the mold. Fig. 3 is a similar view to Fig. 1, showing the tablet in the mold. Fig. 4 is a cross-sectional view of the tablet removed from the mold and having the floor of the sections cut away. Fig. 5 is an end elevation, partly in section, of a machine having the improved tablet mounted therein for use. The view is shown partly in section. Fig. 6 is a front elevation of Fig. 5, and Fig. 7 is a plan of Figs. 5 and 6 with parts removed.

Referring now to the drawings, *a* is a slab or sheet of composition of a waxy or cheese-like nature of suitable thickness and mounted on a suitable base-plate *b*, which base-plate is formed with a level surface near the slab. With a pointed instrument, such as shown in Fig. 2, the slab *a* is carved or cut, as indicated at *c*, with lines of equal depth, which form the outlines or borders of the section allotted to each color. The said tool is preferably conical or wedge-shaped and terminates in a point more or less sharp or in some cases flat. When the slab is cut as described, a cast is taken from the surface so treated, producing a block or tablet *f*, having the divisions between the color-sections formed by walls *a* of tapering or other suitable shape, according to the shape of the instrument used in cutting the lines. Lines of equal depth are readily secured by cutting each line *c* through the whole depth of the slab *a* onto the surface of the plate *b* beneath. In Fig. 3 the material from which the tablet *f* is made is shown run onto the molding-slab *a* for casting therefrom, the slab being bounded by suitable walls *d* for the purpose. The tablet *f* is backed by suitable boards or supports *e e*, (shown in Fig. 4, which illustrates a slab removed from the mold,) and then having cut in the floor *b* of each color-section recesses *g g*, which form receptacles for the color and are of

dimensions and shape according to the shape of the particular section to which they belong. One or more of these recesses may be arranged in each section, and they will preferably be arranged in a line or along a line more or less parallel to or at an angle to the axis upon which the printing-tablet is to be rotated—that is to say, if the section is of elongated form the depression or recess may follow more or less its full length to one side thereof or, otherwise, when the section is narrow and parallel to the axis there may be a series of small depressions throughout the length thereof.

Referring now to Figs. 5, 6, and 7, which show the improved printing-tablet mounted for use, f is the tablet mounted by means of its backing e in a frame h , which frame is adapted to be rotated by trunnions on a supporting-frame a by a handle i when manually operated or by a pulley or other suitable means when mechanical power is employed. The rotatable frame h carries a grid J , having adjusting-screws k , by which the tablet f is adjusted as to its position and level. The frame h carries a platen l , mounted on wheels m , so as to be run off and on. The wheels m are mounted in a frame n , which passes across the machine and from which frame the platen l is suspended by means of rods o and springs p , the springs keeping the platen normally in a raised position off from the printing-tablet f . $q q$ are clamps mounted on the frame h and adapted when turned to clamp the platen down upon the printing-tablet against the action of the springs p , said clamping action being obtained by inclined faces upon the clamp or platen. $s s$ are bolts or clamps for securing the platen in a horizontal position during the operation of preparing the machine for printing and when removing the printed matter. The surface of the platen will preferably be formed of suitable soft material, such as felt or blanket, mounted on a suitable backing. $r r$ are extension-rails onto which the platen is run when off the rotatable frame.

The compositions used are of suitable kind. The slab a , which is carved in the first instance, may be of a composition of a cheese-like or waxy nature adapted to be cut, such as can be made by composition of vaseline, five parts; beeswax, three parts; white paint, one part. Ordinary oil-paint is used, white being preferred, because it forms a contrast with the black iron underneath, so that when the lines are carved by the tool the black iron is exposed and the drawing is clear, as if you were drawing with ink. The cast printing-tablet may be of cement (as ordinary Portland or similar cement) and plaster-of-paris, or of a composition similar to that used for making printers' rollers, or of a mixture of both.

Instead of cutting out the depressions or receptacles in the floor of the color-sections they may be cast with the tablet by building

up the surface of the slab a before casting or by adding composition thereto or by the use of tiles or any blocks found suitable for the purpose placed on the surface of the slab a where required before casting.

Referring now to the operation and assuming a printing-tablet to be mounted as shown in Figs. 5, 6, and 7, the various colors in the form of powder or liquid, preferably powder, are placed in the receptacle g of their respective sections. The sheet of paper which has been printed in a tacky or adhesive substance with the required design is then placed over the block with the printed design downward. The platen l is moved to position over the back of the paper and the tablet, and the clamps q are turned so as to press the platen onto the tablet and firmly secure the paper thereon in contact with the walls of the sections. During these operations the frame h is secured in the horizontal position by the bolts or catches $s s$. Now that the whole is secure the bolts $s s$ are unfastened and the frame and platen are rotated by the handle i or suitably agitated, so that the color from the receptacles falls out onto the paper and distributes itself over the surface bounded by the walls of each section. As soon as the rotatable frame has been sufficiently agitated it is returned to normal horizontal position, the clamps are released, the platen l is run off, and the sheet is removed with all the colors printed thereon. After removal, if required, the color-printed sheet is printed or outlined in black where required by printing in the ordinary way.

By the methods referred to as hitherto proposed it would not be possible to make the color-sections of any great depth without elaborate precautions and expenditure of skill or labor and with shallow spaces for the color the color would fall more or less directly onto the paper and then back again onto the floor of the section. By my improved tablet and means of making same the slab first carved can be so thin as to allow of such freedom of motion of the carving instrument that the picture can be artistically executed, and when the sections are delineated the floor of each section can be readily treated by operations on the mold or the cast tablet to form a recess or recesses of proper depth and covering more or less of the whole section, as may be required, in order that the color will when it falls onto the printed surface of the paper have sufficient space to distribute itself over the surface of the section in a direction more or less parallel to the surface of the paper, whereby a much better print is obtained. By these means the floor of the section need not be of any great depth, while the color-receptacles themselves may be adapted to hold any required quantity of color for printing a large number of copies. In some cases, even where the receptacle extends over practically the

whole of the sections, as it may do, it will be preferable to leave a small ledge of what was the floor of the section next to or alongside of the dividing-walls, although the floor may be cut away right up to the walls, if required. A further advantage also accrues where deep sections or receptacles in the floor thereof are used in that when the tablet is returned to its normal position there is plenty of room for a large quantity of color to rest and leave a clear space between the color and the printing-surface for the color to work across the sheet at the next revolution or operation. The deep receptacles also in a similar manner prevent the color resting in a heap at any particular spot and causing clogging.

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

1. A multicolor-printing tablet divided by a pattern of walls into sections for each color, the said pattern of walls being made of shallow depth and the floor of each section being recessed to form color-receptacles adapted to hold sufficient color for a number of prints and to permit the distributing of the color over the paper when the tablet is inverted thereupon.

2. A process for manufacturing a multicolor-printing tablet having a pattern of raised walls which divide the color-sections, consisting in first forming the pattern by carving grooves in a shallow slab allowing freedom of movement of the carving instrument, and then casting the tablet with the raised pattern of shallow walls therefrom, the floor of the sections being recessed after the walls are formed in order to form receptacles for the color, the shallow walls first cut facilitating the delineation of the pattern, while the deep receptacles provide ample space for movement of the color over the paper and for carrying sufficient color for a number of prints.

3. A multicolor-printing tablet having a floor and a pattern of shallow easily-delineated raised walls which divide the color-sections and which are formed integral with the body of the tablet said floor being formed with color-holding cavities adapted to hold sufficient color for a number of prints, and of a depth sufficient to permit the distributing of the color over the paper when the tablet is inverted thereupon.

4. A multicolor-printing tablet having the outlines of the color-sections formed by raised

walls which leave intervening spaces which have color-receptacles in the floor of a suitable depth to hold sufficient color for a number of prints, and of sufficient depth combined with the height of the shallow walls to permit the distributing of the color over the paper when the tablet is inverted thereupon.

5. The process of manufacturing a multicolor-printing tablet, consisting in taking a slab of soft material and cutting the surface into grooves of suitable cross-section and equal depth around the boundaries of each color-section, casting a printing-tablet from said slab so that the cut lines on the slab form raised walls on the printing-tablet of the desired cross-section and of a height sufficient to permit the distributing of the color over the paper when the tablet is inverted thereupon, substantially as and for the purpose set forth.

6. A process of manufacturing a multicolor-printing tablet, consisting in taking a slab of material of a cheese-like consistency and cutting grooves of equal depth in the surface thereof, which grooves form a pattern corresponding to the boundaries of the sections required for each color, casting a printing-tablet from a slab so cut, the grooves and consequently the raised walls being of a depth sufficient to permit the distributing of the color over the paper when the tablet is inverted thereupon, and serving to divide the color-sections one from another, said printing-tablet being then cut with recesses in the floor of each color-section adapted to hold sufficient color for a number of prints, in which recess the color is to be placed, substantially as and for the purposes set forth.

7. A multicolor-printing tablet comprising a pattern of shallow raised walls formed on a tablet of material of such consistency that color-receptacles can be formed in the floor of the sections after the pattern is delineated and so as to correspond with the shape of each section, and said tablet having such color-receptacles adapted to hold sufficient color for a number of prints, substantially as and for the purpose set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

GEORGE RICHARD HILDYARD.

Witnesses:

REGINALD EATON ELLIS,
ROBERT MILTON SPEARPOINT.