

UNITED STATES PATENT OFFICE.

EDWARD LEE, OF LEEDS, COUNTY OF YORK, ENGLAND.

METHOD OR PROCESS OF DECORATING OR PRODUCING DESIGNS ON THE SURFACES OF EARTHENWARE
TILES, &c.

SPECIFICATION forming part of Letters Patent No. 259,876, dated June 20, 1882.

Application filed January 18, 1882. (No specimens.) Patented in England June 27, 1881, No. 2,813.

To all whom it may concern:

Be it known that I, EDWARD LEE, of Leeds, in the county of York, England, a subject of the Queen of Great Britain, have invented certain new and useful Improvements in the Method or Process of Decorating or Producing Designs on the Surfaces of Earthenware Tiles and other Articles of Earthenware, Slate, and Glass having flat or nearly flat surfaces, (for which I have received Letters Patent in Great Britain, No. 2,813, dated June 27, 1881;) and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

The method or process by which designs are ordinarily produced on the surfaces of earthenware tiles and other like articles is as follows: The design which it is required to produce on the said surfaces is printed on paper from engraved blocks or plates or from lithographic stones, and the print is transferred from the paper to the said surfaces by the ordinary transfer process.

My invention consists, first, in producing the designs on the said surfaces by taking impressions or prints from the engraved blocks or plates or from the lithographic stones on blocks or cylinders formed of or faced with an elastic or yielding material, and "setting off" the impressions or prints so obtained onto the surfaces to be decorated.

In carrying out my invention I use the varnish ordinarily used in color-printing by lithography, and known as "litho-varnish," and I use the pigments ordinarily used in painting on earthenware, slate, and glass, and I charge the engraved block or plate or the lithographic stone with a stiff mixture of the said varnish and the required pigments in the ordinary way, and I take the impression or print on the elastic block or cylinder (which I term the "set-off" block or cylinder) by pressing the elastic surface of the said block on or by rolling the said set-off cylinder over the surface of the said engraved block or plate or lithographic stone, and I then remove the said set-off block or cylinder from the said engraved block or plate or lithographic stone and set off the print or impression onto the tile or article to

be decorated by pressing the set-off block on or by rolling the set off cylinder over the surface of the said tile or article. This process may be performed either by hand or by means of any suitable machine.

When the design to be produced requires the use of several colors a separate engraved block or plate or lithographic stone must be used for each color, as in ordinary color-printing, and the impression from each of such blocks, plates, or stones must be separately set off onto the article to be decorated, and provision must be made for insuring a correct "register"—i. e., for insuring that the different colors shall occupy the required positions on the said tile or article. This may be done by placing or securing the blocks, plates, or stones from which the impression is to be taken and the tiles or articles on which the said impressions are to be set off in frames or on surfaces, each of which frames or surfaces is marked with corresponding marks, or is provided with pins secured in corresponding positions, the said marks or pins corresponding with marks or holes formed on or in the set-off blocks or cylinders. By this arrangement (which is very similar to that used in ordinary color-printing) the set-off block or cylinder, after being removed from the engraved block or plate or lithographic stone and pressed on or rolled over the tile or other article, may be readily replaced on either the block or the tile in exactly the same position relatively to the design thereon.

In producing designs on vitreous surfaces I prefer to take the impressions or prints from the engraved blocks or plates or lithographic stones in varnish alone, and to dust the required pigment or color on the articles to be decorated, after setting off on them the impressions from the set-off block or cylinder. For this purpose I use the varnish known as "stiff litho-varnish."

The engraved blocks or plates which I use for receiving the colors or the varnish which is to be set off on the tiles or other articles must be such as are engraved with raised designs, similarly to ordinary wood blocks. Blocks or plates in which the designs are sunk (as in engraved copper plates) are not suitable.

By my improved process the production of designs on tiles and the like is effected with

greater precision and speed than by the ordinary process, and when desired several prints of the same color may be set off (one over the other) on the article to be decorated, and a
 5 greater body of color may thus be produced on the said articles than is possible by the use of the transfer process, and when desired the tile or other article may be fired after one or more of the colors forming the design have been set
 10 off on it, and after being fired the remaining colors may be set off and the tile or article again fired.

My invention consists, further, in "breaking up" the hard lines of the designs and producing a "tooled" appearance, where required, by
 15 rolling a cylindrical brush or a roller over the surface of the article on which the impression has been set off and while the varnish is fresh, the brush or roller being of such a diameter
 20 that the same part shall not come twice in contact with the decorated surface.

The use of a block or cylinder as described enables the design to be transferred with rapidity and perfection not attainable where a flat
 25 sheet of flexible material is employed, which has been done heretofore, and also enables designs to be printed in several different colors, owing to the facility with which the block or cylinder can be caused to register on a flat surface. The
 30 surface of the set-off block or cylinder may be composed of any suitable material which is yielding but at the same time not extensible—i. e., that will not spread under pressure, which would cause a distortion or blurring of the design and render printing in more than one color
 35 impossible. This is the case with the process heretofore in use of printing by means of flat sheets of elastic material—such as rubber or

glue and molasses—the material spreading under the pressure necessarily applied and producing a blurred and imperfect design. 40

I prefer to make the block or cylinder of rigid material—wood will answer—covered to a thickness of about one-half inch with rubber-coated cloth, which is yielding but non-extensible. I do not, however, limit myself to the
 45 use of such materials.

Having thus described the nature of my invention and the manner in which it is to be performed, I wish it to be understood that I
 50 claim as my said invention of improvements in the method or process of decorating or producing designs on the surfaces of earthenware tiles and other articles of earthenware, slate, and glass having flat or nearly flat surfaces— 55

1. The method of producing the said designs by setting off on the said surfaces prints or impressions which have been received from engraved blocks or plates or lithographic stones charged with the required pigments or material on blocks or cylinders having a yielding but practically non-extensible surface, essentially as hereinbefore described. 60

2. The method of breaking up the hard lines of designs produced as hereinbefore described and producing a tooled appearance in the said
 65 designs by rolling a cylindrical brush or roller over the surface on which the print or impression has been set off and while the varnish is fresh.

EDWARD LEE.

Witnesses:

EDWARD WHITELEY,

WILLIAM NUNNS.

Solicitor's Clerks, Leeds.