

UNITED STATES PATENT OFFICE.

GEORGE F. McINDOE AND JAMES W. McINDOE, OF BOSTON, MASSACHUSETTS, ASSIGNORS OF ONE-THIRD TO ARTHUR E. WHITNEY, OF WINCHESTER, MASSACHUSETTS.

ART OF PRODUCING INTAGLIO PRINTING-FORMS ON CYLINDRICAL SURFACES.

SPECIFICATION forming part of Letters Patent No. 753,290, dated March 1, 1904.

Application filed March 16, 1903. Serial No. 147,980. (No specimens.)

To all whom it may concern:

Be it known that we, GEORGE F. McINDOE and JAMES W. McINDOE, both of Boston, in the county of Suffolk and State of Massachusetts, have invented jointly a new and useful Improvement in the Art of Producing Intaglio Printing-Forms on Cylindrical Surfaces, of which the following is a specification.

Our invention relates to the art of producing intaglio printing-forms on cylindrical surfaces, from which may be printed continuously upon paper or similar material an exact representation of the surface of a selected piece of textile fabric or other like flexible material whether figured or plain; and it consists in certain novel features and successive steps of manipulation and operation, as fully set forth and described hereinafter and particularly pointed out in the claim hereto appended.

The object of our invention is the production upon a cylindrical surface of an intaglio printing-form, on which shall be reproduced a representation of the surface, including figured and plain portions, of a selected piece of textile fabric or other like flexible material, from which an exact representation of the surface of said fabric may be printed continuously upon the surface of a roll of paper or similar material, the ink on the print and in the depressions of the form representing the raised portions of the fabric and the uninked portions of the print and form representing the depressions of the fabric, thereby producing a desirable and useful article of manufacture in large quantities at a small cost.

In carrying out the above objects we first prepare the metal cylinder upon which the printing-form is to be developed by coating it with a substance which is sensitive to the rays of light, such as a sensitized solution of gelatin or other similar material, drying said coating, selecting the desired piece of textile fabric or other flexible material to serve as a basis, saturating said basis with a sizing, as a solution of glutinous material, drying said saturated basis by subjecting it to heat and pressure to remove wrinkles and harden it

and also to prevent the absorption thereby of any other substance that may be applied thereto later, securing said saturated and hardened basis in a fixed and extended position on a suitable supporting-bed having an elastic surface, which may be flat or cylindrical, applying to said hardened basis by means of a printer's composition roller a thin coating of a paste-like material that is impervious to the action of the actinic rays of light, as a dense printer's ink, then transferring said light-resisting coating from the surface of said basis to the sensitized coating on said cylinder, then exposing all parts of the periphery of said coated cylinder in succession to the concentrated actinic rays of light, whereby the uncovered portions of the sensitized coating on said cylinder are hardened and rendered insoluble by the action of water thereon, then washing off the light-resisting coating from said cylinder by means of turpentine, naphtha, or other solvent thereof which will not affect the sensitized coating, then removing by means of water the portions of said sensitized coating that have not been affected by the action thereon of the rays of light, then subjecting said cylinder to a sufficient degree of heat to render the remaining portions of said sensitized material on said cylinder acid-resisting, then subjecting said cylinder to a bath of suitable etching fluid to etch the uncovered portions of said cylinder, and then removing the remaining portions of the hardened sensitized coating from said cylinder by subjecting said cylinder to the action of a bath of suitable solvent thereof, as a hot solution of potash.

All treatment of the cylinder to be etched from and including the applying thereto of the sensitized coating to and including the removal therefrom of the unaffected portions of said sensitized material must be done in a semidark room or one into which no rays of actinic light are admitted.

In order to have the two ends of the design on the fabric if ornamented by figures join properly on the cylinder, so that when continuous printing is done on a roll of paper there

shall be no serious disfiguring breaks in the print, it is necessary that the circumference of the cylinder to be etched should correspond accurately to the length of one or more complete figures of the design, and to properly locate the light-resisting material on the cylinder we use a thin sheet of material having a straight edge upon the coated fabric, with its straight edge in a position that will be parallel to the axis of the cylinder and at the proper or desired point in the design and properly secured to said fabric, pass the same beneath said cylinder, said thin sheet of material, which may be paper, preventing any transfer to the cylinder until said straight edge has reached a point directly beneath the axis of said cylinder, when the transfer will begin, and as the cylinder continues to revolve and before it has completed one revolution said straight-edged piece of paper is removed from the coated fabric, turned end for end, and placed upon the transferred coating on the cylinder with its edge coinciding with the position it occupied at the start, whereby no overlapping of said light-resisting coating can occur.

We claim—

The improvement in the art of producing intaglio printing-forms on cylindrical surfaces, for printing continuously upon paper or other flexible material, a representation of the surface of any selected piece of textile fabric, or other like flexible material, which consists in first preparing a metal cylinder to be developed into the desired printing-form; applying to said cylinder a thin coating of a substance that is sensitive to the rays of light; drying said sensitive coating; selecting a piece of textile fabric, or other like flexible material to

serve as a basis; saturating said basis with a solution of glutinous material; drying said saturated basis by subjecting it to heat and pressure; securing said saturated basis in a fixed and extended position on a suitable supporting-bed, having an elastic surface; applying to said hardened basis a thin coating of a substance that is impervious to the action of the rays of light; transferring said light-resisting coating from said basis to the sensitized coating on the periphery of said cylinder; then exposing all parts of the periphery of said coated cylinder in succession to the concentrated actinic rays of light, whereby the uncovered portions of said sensitive coating of said cylinder are rendered insoluble by water; then washing off the light-resisting coating from said cylinder; then removing the portions of said sensitized coating that have not been affected by the action thereon of the actinic rays; then subjecting said cylinder to heat to render the remaining portions of said sensitized coating acid-resisting; then subjecting said cylinder to a bath of suitable etching fluid to etch the uncovered portions of said cylinder; and then removing the remaining portions of said hardened sensitized coating from said cylinder, substantially as described.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, on this 14th day of March, A. D. 1903.

GEORGE F. McINDOE.
JAMES W. McINDOE.

Witnesses:

N. C. LOMBARD,
J. H. STEVENSON.