

UNITED STATES PATENT OFFICE.

LEONARD H. MILLER, OF CRAWFORDSVILLE, INDIANA, ASSIGNOR OF ONE-HALF HIS RIGHT TO FRANK SEAMAN, OF SAVANNAH, GEORGIA.

IMPROVEMENT IN PROCESSES OF PRODUCING PLATES FOR PRINTING.

Specification forming part of Letters Patent No. **164,581**, dated June 15, 1875; application filed April 4, 1874.

To all whom it may concern:

Be it known that I, LEONARD H. MILLER, of Crawfordsville, in the county of Montgomery and State of Indiana, have invented a new and Improved Process for Producing Plates for Printing, Embossing, and other purposes, of which the following is a specification:

This invention relates to an improved method of obtaining plates for printing, embossing, stamping, and other purposes; and consists, first, in the use of a slow-drying glutinous fluid, with which the letters, characters, drawings, designs, &c., are produced upon card-board, paper, or other suitable material, by the aid of a pen, brush, stamp, form of type, or other means; secondly, in "building up" such designs, &c., by sifting over them a powder substantially as hereinafter described; thirdly, in obtaining plates or blocks for printing, embossing, or stamping, by casting direct from the card-board or paper in suitable metal.

For producing plates or blocks from writings, drawings, or designs, the subject to be reproduced is first drawn upon card-board, or other suitable material, by means of a pen or brush containing a slow-drying fluid, consisting of about one part glycerine to two parts of soft water. Over this I sift powdered gum-arabic, or its equivalent. After remaining on the design for a few minutes, until a union between the fluid and the powder has taken place, the superfluous powder is knocked off. To protect the relief in the process of casting, it is then covered with some suitable mineral powder, such as venetian red, white lead, plumbago, pulverized talc, or French chalk, which is allowed to remain thereon for a sufficient length of time, not less than five minutes. Should it be required to take a cast within twelve hours, the design, &c., must be dried by exposure to heat.

For type impressions I take glycerine and printing-ink, (preferably best green.) After bringing the mixture to the consistency of cream I apply the same to the form by a roller, or other usual means. An impression is taken from the form, as above prepared, on a sheet of card-board, or other suitable material. I then take the following composition, viz., two

tablespoonfuls thick gum-arabic mucilage, one tablespoonful glycerine, and add thereto, by trituration in a mortar, sufficient white lead, flake-white, venetian red, or other suitable mineral powder, to cause the mixture to assume the form of a moist powder. To this is added powdered gum-arabic, in the proportion of fifty per cent. of the whole. The entire powder, after thorough trituration, is sifted over the type impression produced on the card-board, as above described. After being allowed to remain a few minutes the superfluous powder is knocked off, and some suitable mineral powder, such as venetian red, white lead, plumbago, pulverized talc, or French chalk, applied, which is allowed to remain thereon for about five minutes. This application of mineral powder serves to protect the design in the process of casting. The design or print is then allowed to dry for twelve hours, when it is ready for casting. If required, the design or print may be dried without delay by the application of heat.

Should the first application of the materials above mentioned not bring the design, or any part thereof, into sufficient relief, this may be remedied by remoistening with the liquid, and again sifting over the part moistened additional powder. This operation may be repeated as often as necessary to bring the relief, or any part thereof, up to the desired point.

To obtain an intaglio-plate from designs, &c., produced in either of the above methods, it is only necessary to place the card-board, or other material upon which is the design, &c., in a casting-box and pour in molten type-metal, or other material, when a perfect plate or block will be produced, from which impressions may be had without requiring any further mechanical or chemical treatment.

I have described my invention more particularly with reference to obtaining intaglio-plates. It is, however, evident that it is equally applicable to the production of types or plates or blocks in relief. To obtain a type or plate or block in relief I print an impression from a plate or block cast by the intaglio process. I then apply powder, such as before described, to the inked surface, leaving the character or design sunken, and repeat the process of damp-

ing and sifting powder over same until the design has obtained a sufficient depth. I then take a casting, in the manner before described, of the sunken design, and produce a type or plate in relief, which is capable of immediate use in the press, or otherwise, for printing therefrom.

By the process and materials above described I am enabled to produce plates and blocks in a much cheaper and more expeditious manner, and with better and more certain results, than has heretofore been possible in other methods. The materials, prepared and applied as above described, will adhere very closely together, a chemical union being effected between the fluid and the powder sifted thereon, and when dry will form a very hard and smooth surface, from which perfect casts in molten type-metal, or other suitable material, may be repeatedly taken without further preparation or treatment; the application of the mineral powder, as herein described, to the surface of the writing, drawing, or design, protecting the surface thereof, and thus allowing of as many as six

castings being taken from each form without impairing the clearness of the lines.

I do not claim, broadly, making the design in adhesive material, and sifting over the same a powdered substance; but

What I do claim is—

1. In the process of producing designs, drawings, writings, &c., in high relief on paper or card-board, the employment of a fluid consisting essentially of glycerine, and sifting thereon first an adhesive powder, and above that a mineral powder, substantially as specified.

2. The process of producing a plate or block for printing, embossing, or stamping, consisting of first producing the design in high relief on paper or card-board, by means of a fluid consisting essentially of glycerine and an adhesive powder, and then taking a cast direct therefrom in suitable metal, substantially as specified.

LEONARD H. MILLER.

Witnesses:

ALBERT BAKER,
J. B. DONALDSON.