UNITED STATES PATENT OFFICE.

CHARLES H. MUHRMAN, OF CINCINNATI, OHIO.

PROCESS OF PRODUCING ORNAMENTAL CARDS, PICTURES, AND TRANSPARENCIES.

SPECIFICATION forming part of Letters Patent No. 271,505, dated January 30, 1883.

Application filed May 1, 1882. (No specimens.)

To all whom it may concern:

Be it known that I, CHARLES H. MUHRMAN, of the city of Cincinnati, county of Hamilton, and State of Ohio, have invented certain new and useful Improvements in Ornamental Designs, Cards, Pictures, Transparencies, &c., and in the means for reproducing works of art to make the same, of which the following is a specification.

The object of my invention is to reproduce ornamental designs, works of art, &c., in any desired number at comparatively little expense, in order that they may be used for decorations, transparencies, illuminated advertising-cards, signs, &c.; and the invention consists in printing upon a transparent material the picture or design in reverse, by what is known as the "chromo-gelatine process of photography," and then in coating the ground of the design or shade-lines of the picture with an opaque fatty ink or color, leaving the design or portions intended for illumination or coloring transparent; and after the fatty ink or color has become set or dry filling in the transparent parts with the desired color, metal foil or leaf, pearl flakes or dust, or other material, which can be done by unskilled labor.

Having thus stated generally the nature and objects of my invention, I will now describe in detail my method of procedure.

It has been long known that a film of gelatine, albumen, or other analogous substance, when treated with a bichromate and exposed to light, will harden and refuse to absorb water, but will receive fatty ink or colors, while the portions protected from light will absorb water, and when moist will refuse fatty substances.

For the tablet or foundation of my picture or design I use glass or other transparent substance, and for the sensitive coating of the same I use preferably a preparation composed of water, twenty-two ounces; gelatine, two ounces; and bichromate of ammonium, ninety-six grains. The gelatine is first dissolved separately in hot water, and the bichromate dissolved separately. The solution is now ready for use, and is applied to the glass warm, (the glass being first thoroughly cleansed.) The plate is now put into an oven to dry. The temperature of the oven should be about 100° Fahrenheit. When dry the plate, upon cooling, can be printed upon immediately, or stored away for future use.

When it is desired to produce an ornamental sign, business-card, or a panel for decorative purposes, the design is painted in opaque colors upon a transparent plate by a competent artist. From this plate any number of copies can be rapidly reproduced by unskilled labor, as follows: This design-plate is placed over the chromatized gelatine-plate and exposed to light. The light passing through the transparent portions of the design-plate will harden the gelatine acted upon by it, while the part covered by the opaque design will remain unchanged.

After the plate has been exposed a sufficient length of time the design-plate is removed, and the gelatine-coated plate soaked in clear water for about twenty minutes, until the bichromate is thoroughly washed out of the unhardened portions. The plate is now placed upon a table or other horizontal bed and the superfluous water removed by pads, cloth, or chamois rolls, and a roller coated with fatty ink of any desired color rolled over it. The ink will be accepted by the hardened parts of the gelatine, while the parts that have absorbed water will refuse the ink, thus leaving the design transparent and the ground or other portions of the plate heavily coated with opaque color, which is allowed to set or dry. I now proceed to place behind these transparent places any metal foil, pearl colors, or other illuminating substances. The application of these requires no skill whatever, for, no matter how they are applied, only the portions back of the transparent design will show from the front, the material overlapping the opaque ink being of course concealed by it. If the gelatine-coated plate is not intended for immediate use, it may be, after the bichromate has been washed out, set upon edge to dry and then stored away. When it is to be used it should be again soaked until the gelatine that was not exposed to light under the design-plate softens and the surplus water removed, as above described. After the plate has its ground or shade-lines rolled in an opaque ink and the ink has become set or dry the transparent portions may be coated with a colored transparent varnish, or backed up with a colored-glass plate, to be used as a transparency or illumi-

nated sign; or it may be used for that purpose without backing of any kind.

I am aware that others have contemplated printing upon a sensitized plate from an original or positive design, so that the portion of the sensitized film representing the design would remain unchanged, and the portion representing the ground would become hardened, the soft or design portion being then washed off to expose the glass, which was then to be etched out with an acid, or otherwise treated.

I am aware of the English Patent No. 2,815 of A. D. 1855, and English Patent No. 3,543 of A. D. 1869, and do not claim the inventions set forth in either of said patents.

I claim as my invention—

1. The herein-described process of preparing a transparent plate or panel for the reception of an ornamented or illuminated design, for use essentially in the production of ornamental signs, which consists in first coating such plate with a film of bichromatized gelatine, then subjecting the same to the action of light under a transparent plate or negative having the design or subject thereon opaque and the ground transparent, then removing the bichromate alone, by means of water, and finally rolling up the gelatinized side of the plate with an opaque fatty ink or color, which is allowed to set or dry, thus making the ground and shade-lines on the plate opaque, while leaving the design or subject transparent, substantially as and for the purpose specified.

2. The herein-described process of reproducing ornamental designs for signs, cards, transparencies, &c., which consists in first coating a transparent plate with a film of bichromatized gelatine, then subjecting said plate to the action of light under a transparent plate or negative having the design or subject thereon opaque and the ground transparent, then removing the bichromate alone by means of water, then rolling up the gelatinized side of the plate with an opaque fatty ink or color, thus making the ground and shade-lines on the plate opaque, while leaving the design or subject transparent, and finally, after the ink or color is set or dry, backing or covering the said plate or panel over the transparent or design portion with metal foil, pigment, or illuminating-colors to make an ornamental plate, panel, or sign, or a transparency, substantially as specified.

CHARLES H. MUHRMAN.

Witnesses:
HORATIO V. CROLL,
GEO. J. MURRAY.