

# UNITED STATES PATENT OFFICE.

ALFRED VON COTZHAUSEN, OF MILWAUKEE, WISCONSIN.

## TRANSLUCENT PICTURE.

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*To all whom it may concern:*

Be it known that I, ALFRED VON COTZHAUSEN, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Crystalline Pictures, &c.; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to crystalline pictures.

The object is to produce a crystalline picture which shall be clear, and the colors of which shall be strong and vivid with fine color effect, and remain unchanged for a great length of time or indefinitely. Furthermore, to produce a picture of the kind described, which shall be translucent in such a way that the picture will be practically as clear and vivid when held up toward the light on one side as on the other; and, finally, to produce a picture to be used in fine interior decoration, not only in connection with windows, and which shall be lucent in such a way that it will be practically as clear and vivid when held up against the light, as when placed in such a position that the direct light strikes the front of it and the diffused light of the interior only produces the transparency,—for instance, where the picture is placed on an easel or forms the top of a metal or other ornamental table.

With these objects in view, the invention consists in producing a design upon a suitable paper or similar material by lithography, photolithography, printing, or photography, or a combination of processes or procedures, then drying the sheet and placing it in a bath of turpentine and bi-sulphide of carbon, then drying and treating it with a transparent varnish, and again drying it, and then applying the sheet, in the nature of a film, to a plate of glass, serving it with turpentine, whereby an inseparable union is effected between the film and the glass after which another plate of glass or other object, may be put over the film so that the same may be between two plates for protection, and the edges may be suitably ornamented by a metallic bead, scroll, chain, or the like.

As an instance of how I carry my invention into effect, the results of which I call "crystallophies," as distinguished from diaphanies, I proceed as follows: I take a sheet of good white paper absolutely free from any traces of clay, or other mineral matter, and from any fatty, greasy, or resinous matter, and produce upon this, by the processes of lithography, photolithography, or otherwise, the desired design or picture. The crystallophy paper is made, preferably, exclusively of pure linen rags which are reduced to the finest pulp of the most equable consistency, the pulp being then molded into sheets of a size, preferably, twenty-three by thirty-two inches, and pressed and carefully dried. No mineral matter of any kind, or straw or wood pulp is used, which would be liable to obstruct transparency, for the reason that certain colors, particularly, in inks, would fill up the wood fiber, or mineral matter, and form opaque or even blind or dead spots which the subsequent baths and varnish could not penetrate.

In the first production of the design or picture, it is best to use inks or colors which are absolutely fast, so that the colors may not fade on exposure to light. After the design has been produced upon the paper, the same is passed through a bath consisting of a mixture of turpentine and bi-sulphide of carbon, generally in the proportion of two parts, by weight, of turpentine, to one of bi-sulphide of carbon, and is then hung up to dry in a room absolutely free from dust, for about three days, somewhat more or less. The sheet is then treated with a transparent varnish, the preferred transparent varnish being one composed of linseed oil, oil of turpentine, resin, and bi-sulphide of carbon, in suitable proportions to make a clear, strong, and transparent varnish. The sheet is then again dried for from three to four days, under careful exclusion of dust or any adhering matter, and may be subjected to a second varnish bath or treatment. After the sheet has thus been rendered transparent or translucent and crystalline in appearance, I take a plate of fine glass, preferably plate-glass, though I may employ a plate of any configuration, or a lens, render it chemically clean, and then serve it with a thin layer of turpentine and lay the picture on, preferably with its color-

face against the glass. To remove superfluous turpentine, I then lay a sheet of bibulous paper upon the picture and stretch it from the center outward, by a roller or rubber stretcher. This manipulation is to be repeated from three to six times, and, in this way, all air blebs or bubbles are removed, and there will be a perfect union between the picture and the glass.

The employment of bi-sulphide of carbon is of particular importance. Bi-sulphide of carbon is a mobile, brilliant liquid of high refracting power and, when quite pure, is less disagreeable, having rather an ethereal odor. As a solvent of or vehicle for resins and pigments, or colors, I have found that it unites with, or is held by these, somewhat, and that on subsequent treatment, its characteristics of brilliancy and of high refracting power appear to be imparted to the colors. In connection with turpentine, the action is also to carry the colors into intimate contact with the fiber or substance of the sheet, while, by its rapid evaporation, productive of surface refrigeration, it prevents the running or spreading of the colors. Another effect of the bi-sulphide of carbon is to cause the face of the finished sheet to harden somewhat, whereby the sheet may more easily be applied firmly to the glass. This effect of preventing the lateral spreading or running of colors, by the employment of this or some equivalent volatile solvent, is of especial importance when transparent varnishes are being brought into contact with the very delicate and soluble amaranth colors and tints, which are so easily dissolved, as well as with all turpentine and anilin colors and inks. Bi-sulphide of carbon is, so far as I know, the preferable and most ready volatile solvent to be employed in the step of the procedure named, but equivalent volatile, refrigerative or color-spreading preventive solvents may be employed in the order of their availability and usefulness, the operative usefulness being determined, in general, where the solvent-power is approximately equal, by the boiling-point, the lower the boiling point, under the conditions named, the greater the importance of the solvent relative to the operation, where the effect is due to its solvent-action and its volatility with accompanying refrigerative power.

By the treatment with turpentine and by the manipulation, the union of the picture with the glass becomes more and more intimate and is stronger and closer than where pictures are laid upon glass and brushed over with water or alcohol, the latter becoming, in time, separated from the glass and porous and thus blind. After the turpentine is dry, the picture is practically finished; but, for its protection and to enhance the appearance of the product, a plate of fine clean glass may be fixed to the back. The edges may be ornamented with a metallic bead, scroll, or with ladder-chains.

Instead of backing the picture with mere

glass, a mirror may be employed, preferably a mirror of platinized glass, or the crystal-plates may be backed with opalescent American cathedral glass.

The "platinum mirrors" possess the peculiar quality that they act like mirrors to reflected light, while to light coming through the plates, they are perfectly transparent. In other words, if the source of light be in front of the plates, they are serviceable as mirrors, while with the source behind them, they act like common glass. The manufacture of these mirrors is very simple. Into a solution of chloride of platinum, saturated to the point of crystallization, etheric oil of lavender is poured, thus obtaining a thick fluid containing platinum in a most finely-divided state. This fluid is applied to the glass in very thick layers by means of a brush, during which process the most thorough care must be exercised to avoid any dust settling on the surface. The plates are then dried and, in a proper furnace, are heated to red heat and allowed to cool off again in the same furnace. After being rubbed off with a cloth and Spanish White, these mirrors may not appear as clear white as mirrors coated with silver or mercury, but they give reflections that are markedly sharper in detail and more true to nature and, in addition, possess the peculiar double characteristic already mentioned of being both reflecting and transparent. The employment of these mirrors as back-plates to the crystallophies is very effective.

The opalescent back-plate, or mirror, as the case may be, gives a still warmer glow to the colors of the picture on the front plate. The refracting, and, at the same time, reflecting effect of the opal-glass or mirror, reproduces the most delicate tones of mother-of-pearl mosaic, and bestows upon crystallophies the distinctively "high art" appearance which characterizes them.

The manufacture of crystallophies is materially different from that of European diaphanities. The essential difference is, that after the completion of the art-reproduction, the impressions of these crystallophies are submitted to a treatment with a solution of turpentine and bi-sulphide of carbon before the transparent varnish is applied, while the European method is simply to saturate the prints with a cheap resinous solution.

A further difference and one decidedly to the advantage of the crystallophies, is that they are firmly attached to the crystal-plate, in fact may be said to be amalgamated with it, by the application of a turpentine solution to the ground-plate whereby an inseparable combination is achieved between the impression and the glass; while, on the other hand, European diaphanities are simply laid loosely between two lights of window-glass which are then held together by an ordinary and insalutary sash of lead.

For crystallophies, the very finest quality of American ground plate-glass with prismatic

bevels is preferable, and the plates are held together by elegant, light and delicate American "ladder-chains." In addition, they are finished with highly artistic ornamental designs in lacquered or gold-plated metal. No lead is used in this process.

Diaphanies are only useful as window decorations, and have no utility for any other purpose whatsoever, as without being directly held against the light they appear dark, lifeless, and opaque—while crystallophies, on the contrary, appear as clear, brilliant and translucent when placed against a wall, on a table, or on an easel in the moderate light of the room only, the light diffusing from the interior.

Crystallophies are not a weak attempt to replace and imitate paintings on glass and stained windows, but they serve, on account of their remarkable refracted glow and the transparency of their colors as a substitute for the finest antique mosaics and inlaid mother-of-pearl works of art, all of which, however, they surpass, by their exceptional brilliancy and the refractive power of the ground and polished crystal-plates and lenses.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The method of making translucent picture-sheets herein described, which consists in producing a suitable design or picture, in color or colors, upon a suitable sheet, drying the same, passing it through a bath of turpentine and a volatile refrigerative, or color-spreading preventive solvent, again drying, then treating with a transparent varnish, and drying again, all substantially as set forth.

2. The method of making a picture, vivid in color, and of strong effect, by producing a design or picture, in color or colors, on a suitable sheet, then drying the sheet, then passing it through a bath of turpentine and a volatile refrigerative, or color-spreading preventive solvent, then drying it again and treating it with a transparent varnish and again drying, and then applying the sheet, in the nature of a film, to a plate served with turpentine, all substantially as described.

3. The method of making translucent picture-sheets herein described, which consists in producing a suitable design or picture, in color or colors, upon a suitable sheet, drying the same, passing it through a bath of turpentine and bi-sulphide of carbon, again drying, then treating with a transparent varnish, and drying again, all substantially as set forth.

4. The method of making a picture, vivid in color, and of strong effect, by producing a design or picture, in color or colors, on a suitable sheet, then drying the sheet, then passing it through a bath of turpentine and bi-sulphide of carbon, then drying it again and treating it with a transparent varnish, and again drying, and then applying the sheet, in the nature of a film, to a plate served with turpentine, all substantially as described.

5. The crystalline sheet herein described, having the appearance and characteristics of color and color-effect set forth, clear and vivid to transmitted light as well as to reflected light, whereby it may be used either for window-decoration, for a wall or easel picture, or for an ornamental table-top, or the like, the same being a design in color or colors upon suitable material, such as the described paper, the material impregnated with bi-sulphide of carbon and containing a residue of sulphur and being translucent, and the color being embodied and brilliant, substantially as described.

6. The crystalline picture herein described, consisting of a sheet of suitable material bearing a design in color or colors, the material having the color embodied and this being impregnated with bi-sulphide of carbon, and containing a residue of sulphur, being rendered brilliant, and translucent, in combination with and intimately applied and fixed to a plate, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ALFRED VON COTZHAUSEN.

Witnesses:

R. G. DYRENFORTH,  
F. F. ROHN.