

# UNITED STATES PATENT OFFICE.

LEONHARD LEDERER, OF WALDHOF, NEAR MANNHEIM, GERMANY.

## PRODUCING COLORED DESIGNS, &c., ON MIRRORS.

SPECIFICATION forming part of Letters Patent No. 462,441, dated November 3, 1891.

Application filed June 23, 1891. Serial No. 397,240. (No specimens.)

*To all whom it may concern:*

Be it known that I, LEONHARD LEDERER, a subject of the King of Bavaria, residing at Waldhof, near Mannheim, in the Grand Duchy of Baden, Germany, have invented a new and useful Process for the Production of Colored Designs and Colored Writing on Mirrors, of which the following is a specification.

This invention relates to a process for producing colored designs on the polished or engraved or etched surfaces of glass mirrors; and it consists in first coating these surfaces with soluble metallic compounds and then acting on these with sulphureted hydrogen or ammonium sulphide, or in place of metallic compounds other chemical reagents may be used, which form compounds that are colored by means of sulphureted hydrogen or ammonium sulphide. The surfaces so acted upon are then covered with metal foil.

For the above purpose the design produced on the glass by engraving or etching, or a combination of these, is coated on those parts which are not to be colored with a coating of varnish, the glass having been previously carefully cleaned. The exposed glass surface is now treated uniformly with a dilute aqueous solution of sulphate of cadmium. After evaporation of the water there is left on the glass a very thin coating of the cadmium salt. If it is desired to produce several colors, the solutions of the substances giving colored compounds are applied as rapidly as possible one after the other. The glass surface thus prepared is then subjected to the action of sulphureted hydrogen, whereby the colorless cadmium sulphate is converted into yellow cadmium sulphide. If the layer of cadmium sulphide is now covered by metal foil, the color will appear as dead gold or burnished gold, according to the nature of the etching or engraving of the glass. The said covering is effected as follows upon the colored design: The part of the surface which was protected by varnish having been cleared and carefully cleaned, a foil of silver, aluminium, &c., is then pressed upon the colored parts by suitable known means in such manner that no

air is left between the foil and the glass. The foil fills out the finest recesses of the design and adheres closely to the glass surface.

In order to remove the metal extending beyond the design, it is acted upon with a spatula of wood, horn, vulcanite, &c., so as to limit the metal covering accurately to the design. The entire glass surface is then carefully cleaned again, and is silvered all over in the usual manner.

Having now particularly described and ascertained the nature of this invention and in what manner the same is to be performed, I declare that what I claim is—

1. A process for producing colored designs or writing on the polished, engraved, or etched glass surfaces of mirrors, which consists in depositing a film or coating of cadmium salt thereon, subjecting this coating to the action of sulphureted hydrogen or ammonium sulphide, whereby the colorless cadmium sulphide is converted into yellow cadmium sulphide, and then applying a coating of metal foil to said colored surface for protection or additional ornamentation, substantially as set forth.

2. A process for producing colored designs or writing on the surfaces of mirrors, which consists in depositing a film or coating of cadmium salt thereon, subjecting this coating to the action of sulphureted hydrogen or ammonium sulphide, whereby the colorless cadmium sulphide is converted into yellow cadmium sulphide, then applying a coating of metal foil to said colored surface for protection or additional ornamentation, and finally applying a coating of silver over the whole surface in the usual manner, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LEONHARD LEDERER.

Witnesses:

O. TAPSCH,

S. H. GROFF,

Both of Mannheim, Germany.