(Model.) 2 Sheets—Sheet 1.

E. L. BROWN.

METHOD OF ORNAMENTING GLASS AND OTHER SURFACES.

No. 340,550. Patented Apr. 27, 1886.

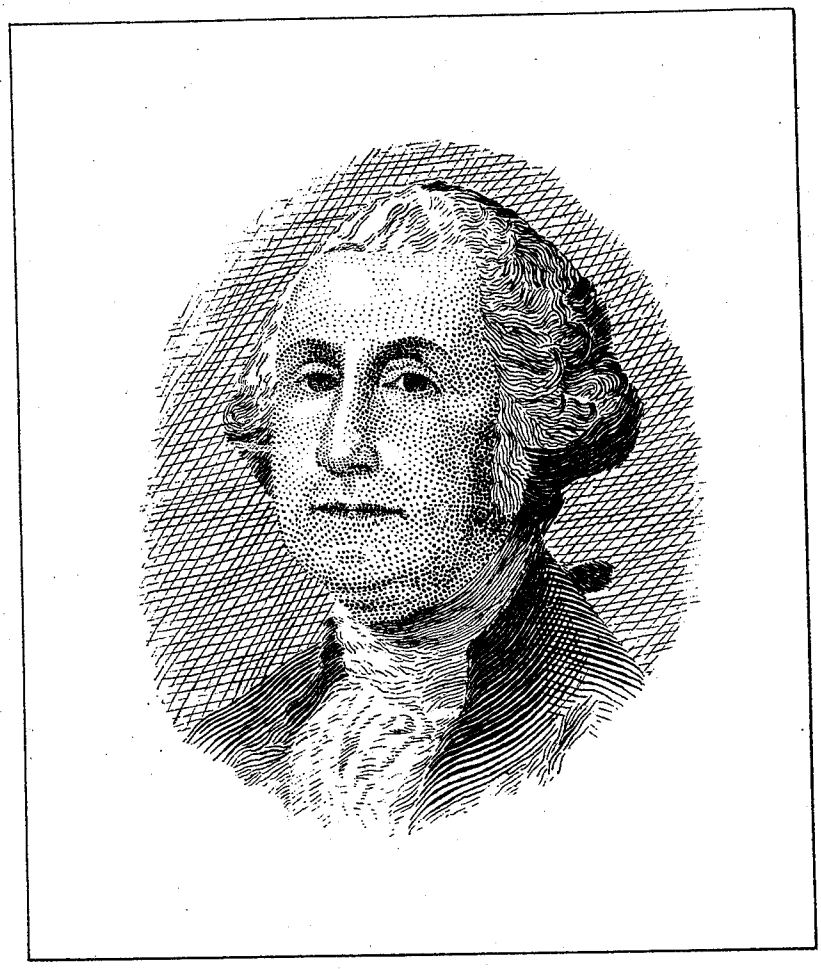


FIG. 1.

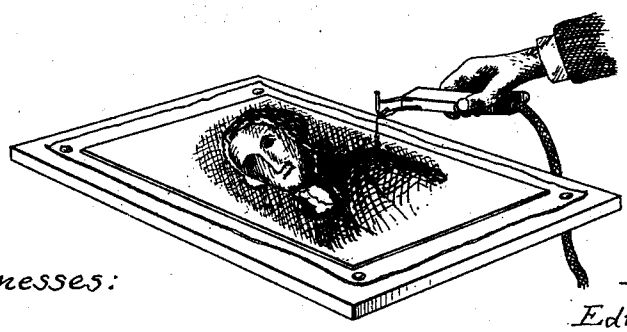


FIG. 2.

Witnesses:

John S. Thompson;

J. B. Halpenny.

Inventor:

Edwin Lee Brown

By Gridley & Fletcher

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N. PETERS, Photo-Lithographer, Washington, D. C.

(Model.) 2 Sheets—Sheet 2.

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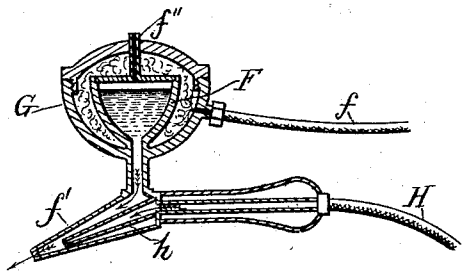


FIG. 3.

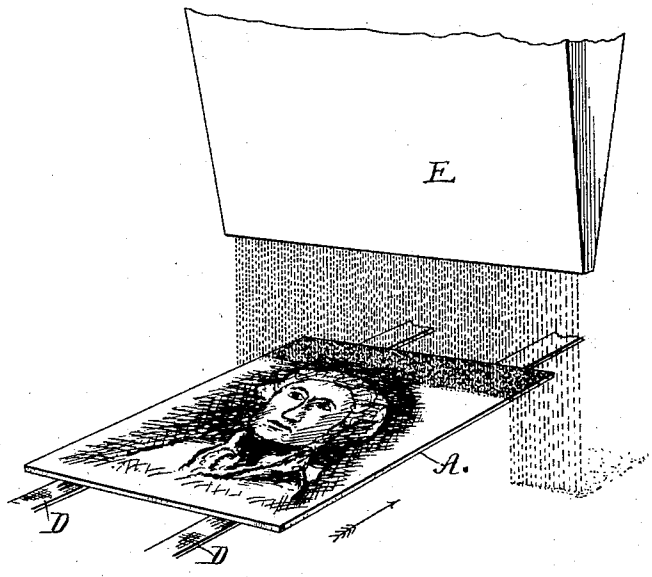


FIG. 4.

Witnesses:
J. B. Halpenny
John S. Thompson

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UNITED STATES PATENT OFFICE.

EDWIN LEE BROWN, OF CHICAGO, ILLINOIS.

METHOD OF ORNAMENTING GLASS AND OTHER SURFACES.

SPECIFICATION forming part of Letters Patent No. 340,550, dated April 27, 1886.

Application filed September 28, 1885. Serial No. 178,388. (Model.)

To all whom it may concern:

Be it known that I, EDWIN LEE BROWN, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improved Method of Ornamenting Glass and other Surfaces, of which the following is a description, reference being had to the accompanying drawings, forming part of this specification, in which like letters of reference designate corresponding parts.

The purpose of my invention is to provide a means of ornamenting glass, stone, metal, and other polished or burnished surfaces, and particularly of applying portraits, pictures, or figure delineations thereto in a manner to enable me to impart to them a delicacy and richness of shading and tone wholly unattainable under the old processes.

I accomplish said object by first applying to the glass or other surface by means of a jet of air, or air and steam, or steam alone, any suitable plastic or elastic material, which may serve as a resistant to a sand-blast, acid, or other known abrading or etching process, the figure, portrait, picture, or ornament desired to be transferred to the glass or other surface being delineated thereon in said resistant material, after which the surface to be ornamented may be submitted in the usual way to the action of the sand-blast, or to an etching process by means of acid, as commonly practiced, when the parts uncovered by said resistant material will be cut or eaten away, leaving the figure or ornament as delineated, all of which is hereinafter more particularly described, and definitely pointed out in the claims.

Figure 1 in the drawings represents a plate ornamented by a portrait prepared thereon by means of my improved process. Fig. 2 represents the application of the resistant material in the formation of a portait by means of an "air-brush." Fig. 3 shows a longitudinal sectional view of a modified form of instrument for applying said resistant material, and Fig. 4 shows said glass with the resistant material thereon as submitted to a sand-blast.

I have represented in said drawings the reproduction or copying upon glass of a portrait, which example is sufficient to show the manner in which any picture, ornament, or configuration may be formed thereon.

A in said drawings indicates a plate of glass, beneath which is placed a paper, B, having a portrait upon its surface, the whole being provided with a suitable support.

C, Fig. 2, indicates the usual air-brush, which, in lieu of paint or ink, as ordinarily used therein, is preferably supplied with bichromatized gelatine, or ordinary glue reduced to a plastic state by the addition of water and glycerine, in the manner hereinafter set forth, when the same is applied to the surface of the glass in the form of a spray or jet, as shown at *c*, Fig. 2.

To enable the operator to see the material more readily, and to more accurately fix the various gradations of light and shade, I prefer to mix some coloring-matter with the resistant—such as lamp-black, india-ink, neutral tint, or any pigment or color that will enable said resistant material to be readily seen when on the surface of the glass.

If a copy is to be made as shown in the drawings, the operator follows the various outlines of the portrait or ornament with the spray or jet, and is enabled to reproduce with the utmost fidelity all the gradations of light and shade, the particles of resistant material being distributed over the glass in dots or masses, as clearly shown in the drawings. The glass A is then preferably submitted to the sand-blast, as shown in Fig. 4, by placing the same upon belts or carriers D D, Fig. 4, when it is passed beneath the usual "gun," E, from which is shot a blast of sand, as shown, which abrades or cuts away all that portion of the glass not covered by the resistant. This completes the operation, the glass upon being cleaned presenting a faithful copy of the original.

It is obvious that in lieu of the sand-blast the glass may be etched by any known acid process, in which case I prefer to use liquid asphaltum as a resistant.

I do not confine myself to the useof the air-brush, as it is manifest that a jet of steam or steam and air may be utilized in like manner, and in the use of certain resistants may be found preferable.

When asphaltum is used, it is desirable to adopt some method for keeping it warm, as it is liable when cold to become set and hard. I therefore prefer to use it in the modified form

of device shown in Fig. 3, in which F represents a cup for the reception of the asphaltum, which cup or vessel, preferably closed, is inclosed in a secondary closed vessel, G, into which may be injected, through the pipe *f*, a volume of steam or hot water, which serves to keep the asphaltum warm and in a plastic state. The vessel F communicates, as shown, with a nozzle, *f'*, within which is a secondary nozzle, *h*, communicating with an air or steam pipe, H, which forces the asphaltum or resistant out of the nozzle *f'* in the form of a jet or spray, and causes it to be distributed upon the glass in a way to enable the sand-blast or acid to be used thereon with the desired effect. The vessel F is provided with a tube or vent, f^2, to admit air from without and permit a ready flow of the material.

Instead of copying a picture or ornament placed beneath the glass, it is obvious that a skilled artist or designer may draw a picture or design directly upon the glass or other surface without any aid whatever, the result being the same in either case, and its excellence proportionate to the skill of the delineator. When it is desirous to represent figures or pictures upon polished stone or metal surfaces, to which said process is excellently adapted, this course would be obviously necessary.

In order to ornament glass or similar surfaces successfully by either the sand-blast or acid process, it is essential that the resistant should be placed thereon either in the form of dots or lines, and the use of a spray or jet is the only practicable and economical means by which the former can be accomplished.

Resistants may be prepared as follows: Ordinary glue is dissolved in sufficient water to make it of the desired consistency, with glycerine added to the amount of about one-eighth of the weight of the glue. If a greater resistant is required, the glue may be sensitized with bichromate of potash, making what is commonly known as "bichromatized gelatine." The proportion of said mixture may be substantially as follows: glue or gelatine, two ounces; water, twenty-five to thirty ounces; bichromate of potash, one ounce.

Where asphaltum is used, it may be dissolved in turpentine to a suitable consistency, and is preferably kept warm, in the manner stated or in any similar way, while being used.

In the final treatment of the article to be ornamented I regard the use of fluoric acid—the fumes from acid and fluor-spar as commonly practiced—as the equivalent though inferior of the sand-blast, so far as glass or silicate surfaces are concerned; and I do not therefore limit myself to the use of one, as it is manifest that either may accomplish the result after the resistant material is properly placed upon said surface; nor do I limit myself to the resistants mentioned, as liquid beeswax, sealing-wax, paraffine, copal, shellac, gum-tragacanth, ichthyocolla, or other equivalent materials in a plastic or liquid state may be used with good results; but for the sand-blast I prefer some material possessed of more or less elasticity.

It is apparent that said process may be used with fine effects in the ornamentation of silver-ware or marble surfaces; but it is particularly applicable to glass on account of its transparency, which enables the most elaborate pictures or configurations to be copied or traced directly and with the utmost ease.

Having thus described my invention, I claim—

1. The process of ornamenting the surfaces of glass, stone, metal, or other equivalent material by first delineating the design or picture thereon, by means of a jet or spray of sensitized gelatine or equivalent resistant substance or material, and, secondly, submitting the surface so prepared to the action of a sand-blast or other known abrading or etching process, substantially as specified.

2. Glass, stone, metal, or other equivalent material, the surface or surfaces of which are ornamented by drawing the design or picture thereon by means of a jet or spray of sensitized gelatine or equivalent resistant substance or material, and afterward subjected to the action of a sand-blast or other known abrading or etching process, substantially as shown and described.

EDWIN LEE BROWN.

Witnesses:
D. H. FLETCHER,
J. B. HALPENNY.