UNITED STATES PATENT OFFICE.

JOHN BAYNES, OF BRONXDALE, ASSIGNOR TO THE FIRM OF JOHN MATTHEWS, OF NEW YORK, N. Y.

PROCESS FOR PREPARING GLASS, METAL, &c., FOR EROSION.

SPECIFICATION forming part of Letters Patent No. 282,485, dated August 7, 1883.

Application filed January 10, 1883. (No specimens.)

To all whom it may concern:

Be it known that I, JOHN BAYNES, of Bronxdale, in the county of Westchester and State of New York, have invented a new Process for Preparing Glass, Metal, or other Substances for Erosion, of which the following is a specification.

My invention relates to a new process for preparing glass, metals, or other substances for erosion. By the word "erosion" I mean the eating away of the glass or metal caused by the application of acid, the sand-blast, or other similar process for producing the desired pattern on the glass or metal. Various processes have been used to effect this result; but by my improvement hereinafter described a saving in expense is obtained, as well as a greater rapidity and facility in preparing the substance for erosion in any desired pattern.

My improved process is as follows: The glass, metal, or other substance into which the pattern is to be cut is coated on its face with a preparation or mixture composed of gum-copal, gum-kauri, or any gum which is soluble in oil of turpentine, or other well-known essential oils in which asphaltum is also soluble, together with asphaltum and any such oil, in the proportions of about ninety per cent. of asphaltum to ten per cent. of the gum. The quantity of the oil used is according to the thickness or strength of which it is desired to make the mixture or varnish. The proportions above given, however, may be varied for different circumstances and kinds of work. The varnish or mixture made as above described is applied to the surface of the glass, for example, by dipping or with a brush; or it is powdered and spread over it if the mixture is used in a solid form. This mixture, compounded as above set forth, is sensitive to the action of light, and forms a sensitized ground or "resist." The design or pattern which it is desired to etch upon the glass is then placed over this resist, said design or pattern being fixed upon some transparent or translucent substance. Thus the design may be photographed, drawn, painted, or placed in any manner upon glass or paper or any other translucent material; or the design or pattern may be transferred directly to or printed or placed on the sensitized mixture forming the coating of the glass to be etched, which coating I have called the "resist," in any suitable manner. After the transparent or translucent substance, with the design or pattern on it, is placed above the coated glass, the whole must be exposed to sunlight for a period of, say, eight hours for ordinary work, though this period varies with the differences in the light and with the translucency of the material on which the design or pattern is set. By this exposure to the sunlight those portions of the coating or resist which do not lie below the pattern, and to which the light has free access through the translucent or transparent material above, are hardened, while the portions under the pattern and to which the sun has not free access remain soluble, and are readily washed away by the application of benzole, turpentine, or any convenient solvent, thus leaving the glass or metal to be etched uncovered and exposed in exactly the form of the pattern which was above it when exposed to the sun. This exposed portion is then readily etched by the use of acid or by sand-blast or any of the well-known processes.

When patterns are required to be arranged through the medium of spirit-varnishes, glue, or substances not soluble in the mediums in which the coating or resist is soluble, then the resist may be applied over a substratum of such spirit-varnish or similar substance, the latter being in direct contact with the substance to be etched, and after the exposure to the sun and the use of the solvent on the resist, as described, another suitable solvent can then be used upon the portions of the substratum left exposed by the action of the first solvent on the resist. A dye or pigment may be also applied, when desired, to materials capable of receiving it, while the insoluble parts of the resist remain, thus forming a dyed or colored design.

The invention above described permits the use of printed paper as a pattern, through which paper the light acts on the resist.

I do not claim covering the glass or other substance with a mere mixture of oil and asphaltum, and then exposing to light. Such a mixture is altogether too slow in the effect

which light has upon it to be of any use in the process of erosion.

I claim—

1. The composition of asphaltum with gum-copal, which is soluble in oil of turpentine, in which asphaltum is also soluble, and of such oil, in about the proportions mentioned, for use as a resist in erosive processes, substantially as described.

2. The process herein described of preparing substances for erosion, which process consists in first applying to the substance a composition of asphaltum, of gum-copal, which is soluble in oil of turpentine, in which asphaltum is also soluble, and of such oil, in then superimposing the pattern directly upon said composition, in then exposing to the sunlight, and finally using a solvent and taking off that portion of the composition remaining unsolidified, all substantially as described.

JOHN BAYNES.

Witnesses:
GEO. LUCE,
MAX LEBE.