UNITED STATES PATENT OFFICE.

HENRY FEURHAKE, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN PROCESSES OF DECORATING GLASSWARE.

Specification forming part of Letters Patent No. **212,365**, dated February 18, 1879; application filed December 26, 1878.

To all whom it may concern:

Be it known that I, HENRY FEURHAKE, of the city of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful and Improved Process for Decorating Glassware, which is fully set forth in the following specification.

The invention relates to decorating glassware by etching designs thereon by the use of acids.

The object of my invention is the decorating of glassware of all kinds.

The invention consists, first, in preparing the design to be etched on the ware, and also a paper prepared to receive and transfer it, as well as the composition used to prepare said paper; second, it consists in the ink used to print the design; and, lastly, in cutting or etching the design, when transferred to the glassware, by the use of acids, and in protecting all that portion of the glassware not occupied by the design from the action of the acids used.

In carrying out my process or invention, the design to be transferred to and etched on the ware is first cut in intaglio on box-wood, steel, or a lithographic stone; and when a stone is used it is etched in intaglio by the use of nitric acid, and the ink hereinafter described is applied to the surface of the stone around the etching by a composition roller; and the stone is used dry, (not dampened, as is usually done when printing lithographs.) The paper is also used dry, and is of the kind known as "French folio," or "onion skin." This paper is prepared by coating it with a composition made as follows: starch, one pound; glycerine, one ounce. Boil the starch and add the glycerine; then stir the two together when boiling. Second, the ink used is composed of the following articles, to wit: Beef-tallow, one part; bees-wax, three parts; rosin, two parts; asphaltum, one part; and lamp-black, one-half part, all of which are boiled together. Lastly, the design, printed as above described, is placed between sheets of paper slightly dampened, so that the said impression-sheet may become pliable and be easily pressed to the shape of the ware to be ornamented. It is then placed on the ware with the ink side next to it, and is gently pressed and smoothed on it until it adheres thereto in all its parts. The paper is then moistened with water, which causes it to separate from the ink, so that it can be removed, leaving the ink on the glass and the design in clear lines. Powdered rosin is then dusted on the ink, and the superfluous rosin carefully removed by rubbing with cotton or a soft brush, the application of the rosin being repeated until the ink is completely covered. The remaining portion of the ware, exclusive of the design, is then covered with asphaltum-varnish, and when dry the ware so prepared is dipped in a bath of white or hydrofluoric acid, in which it is allowed to remain from five to ten seconds. As soon as removed therefrom it is rinsed with water. The varnish, rosin, and ink are removed by washing the ware with turpentine or benzine, whereupon the design will be found etched on the glass.

It will be seen that only the design is exposed to the action of the acids, and that by this process glassware of any shape or pattern can be cheaply ornamented.

Having thus described my invention, what I claim, and desire Letters Patent for, is—

The process of ornamenting glassware herein set forth—that is to say, printing the design in intaglio with the ink, and on the paper composed and prepared as hereinbefore specified, the ink being applied when a lithographic stone is used by a composition roller and the stone kept dry; transferring the design to the glassware, so that the design is left clear; coating the ink with powdered rosin, and coating the remaining portions of the ware, exclusive of the design, with varnish; then submitting the ware so prepared to the action of an acid or acids, rinsing the ware with water, and removing the varnish, rosin, and ink by the application of turpentine or benzine, substantially as and for the object specified.

HENRY FEURHAKE.

Attest:

CHAS. F. MCKENNA,

GEO. HADFIELD.