

# UNITED STATES PATENT OFFICE.

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METHOD OF TRANSFERRING DESIGNS TO GLASS, PORCELAIN, OR OTHER SURFACES.

SPECIFICATION forming part of Letters Patent No. 467,090, dated January 12, 1892.

Application filed October 5, 1891. Serial No. 407,767. (No specimens.)

*To all whom it may concern:*

Be it known that we, ALBERT E. FRANK and EDWARD H. HOAD, residents of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Transferring Designs to Glass, Porcelain, &c.; and we do hereby declare the following to be a full, clear, and exact description thereof.

Our invention relates to the transferring of designs to glass, porcelain, stone, metal, wood, or any other substance or substances to which it may be found to be applicable.

The object of our invention is to provide a process of transferring designs and decorations in the form of flowers, figures, lettering, &c., to glass, porcelain, metal, or other suitable substances, so as to bring out the colors in their original brilliancy, as well as to produce distinctly-defined outlines of such designs.

To these ends our invention consists, generally stated, in coating paper with a suitable soluble surface or glaze, then applying a less soluble surfacing or glaze to the surface already coated, printing the design on said surface, placing the printed surface in contact with the article to be decorated, moistening said paper, and withdrawing the same, the result being the complete transfer of the design with all the various colors and tints as they appeared in the original, as the moistening of the paper dissolves the more soluble glaze in contact therewith, so separating the paper from the design without dissolving the less soluble surfacing or glaze carrying the design, and the transfer of the entire design without attacking the surfacing or glaze carrying the same is obtained.

To enable others skilled in the art to practice our invention, we will describe the same more in detail.

The paper on which the designs to be transferred are printed may be of any suitable texture; but for most purposes we prefer to employ tissue-paper, as it is more pliable and may be made to conform more readily to the shape or contour of the article to be decorated. The paper is first coated with a suitable soluble surfacing or glaze, and from practical experience we have found it preferable to employ a preparation composed of starch and

glycerine in about the proportion of one ounce of glycerine to one pound of starch. The glycerine, however, may be dispensed with, as it performs no important function, but simply by its absorbent properties prevents the paper from curling and makes it more easy to handle both in printing and in transferring the design. Sufficient water is added to the starch and glycerine to bring the same to the consistency of a paste which flows readily, and this paste may be applied to the surface of the paper to be coated by means of a brush, sponge, or suitable machinery devised for the purpose. The paper thus coated is permitted to dry properly, when it is again coated with a second soluble surfacing or glaze, but one which is less soluble than the initial surfacing or glaze applied as described. This second or less soluble surfacing or glaze is composed, preferably, of gum-arabic brought to the proper consistency and applied in any convenient manner. After the less soluble surfacing or glaze has been applied to the paper it is again permitted to dry properly. This manner of treating the paper gives a transfer-paper which dries quickly, and yet one which does not curl or wrinkle, but the sheet remains flat and renders convenient the printing of the design thereon. The above examples of the surfaces or glazes are given merely as illustrations, it being understood that we may employ any suitable materials for the same fulfilling the requisites of a quite soluble glaze for the first coating and a less soluble glaze for the second coating.

The design is printed on the surface of the paper prepared in the manner described. The designs, which may consist of flowers, leaves, figures, &c., made up of various colors, are formed on type or engraved on stone, copper, wood, or like plates, and the coloring-matter—such as will withstand the fire unchanged or will develop under heat—is applied to said type-plates, and the impression is taken upon the prepared paper of the design, said impression embodying all the colors as applied to the plate from which it is taken. In this manner the paper is treated preparatory to the transfer operation. The paper thus prepared is applied with its printed face directly to the surface of the article to be decorated, with the colors of the



printed design directly in contact with that portion of the article to which they are to be transferred. When, therefore, the paper has been so arranged as to bring the design into the position it is to occupy on the article to be decorated, the back of the paper is moistened at the parts thereof which carry the design. The transfer of the design from the paper to the surface to be decorated then takes place.

The design, as stated, is printed directly upon the less soluble surfacing or glaze, so that when the back of the paper is moistened the moisture will first penetrate the paper and attack the more soluble surfacing or glaze applied as the first coating. The action of the moisture will be to dissolve out the more soluble surfacing or glaze, so that when the paper is removed the more soluble surfacing or glaze will adhere to the paper and be removed therewith. Upon the removal of the paper the design, together with the less soluble surfacing or glaze, will adhere to the surface to be decorated. The less soluble surfacing or glaze acts as a medium of transfer, while at the same time it acts as a covering or protection for the design against the action of the moisture applied to make the transfer. By giving the moisture an opportunity to attack the more soluble surfacing or glaze we are then enabled to remove the paper without fear of marring the appearance of the design by removing any portion of it when the paper is removed. The less soluble surfacing or glaze transfers the design in its entirety and does not permit the removal of the paper to destroy any of the brilliancy of its colors or the clearness of its outlines. After the paper has been removed and the design

permitted to dry the surface of the article decorated is sponged off to remove the less soluble surfacing or glaze. The transfer will be equally complete whether the surface be glazed or unglazed. The design is now ready to be burned in or coated with varnish in order to retain the colors permanently.

By the employment of the above process of transferring designs a true and exact transfer of the design as it appeared in the original is insured. The transfer-paper does not curl or wrinkle and is readily made conformable to the contour of the article to be decorated.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. A transfer-paper having applied thereto a suitable soluble surfacing or glaze and having applied to said soluble surfacing or glaze a less soluble surfacing or glaze, substantially as and for the purposes set forth.

2. The herein-described method of transferring designs to glass, porcelain, and other surfaces, consisting in first coating paper with a soluble surfacing or glaze, then coating said paper with a less soluble surfacing or glaze, printing the design in any desired colors on said coated surface, applying the design directly to the surface to be decorated, and moistening and removing the paper, substantially as set forth.

In testimony whereof we, the said ALBERT E. FRANK and EDWARD H. HOAD, have hereunto set our hands.

ALBERT E. FRANK.  
EDWARD H. HOAD.

Witnesses:

J. N. COOKE,  
ROBT. D. TOTTEN.