(No Model.) 2 Sheets—Sheet 1.

# J. LA FARGE.

## MANUFACTURE OF COLORED GLASS WINDOWS.

No. 274,948. Patented Apr. 3, 1883.

*Fig. 1*

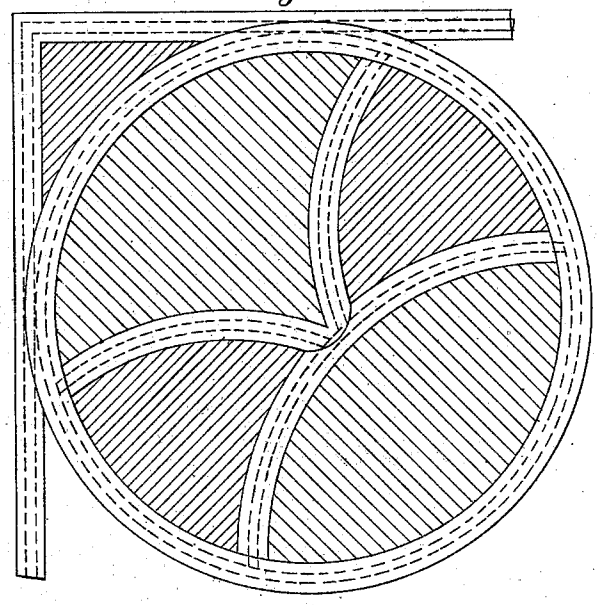


*Fig. 2.*

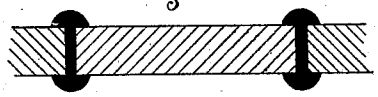
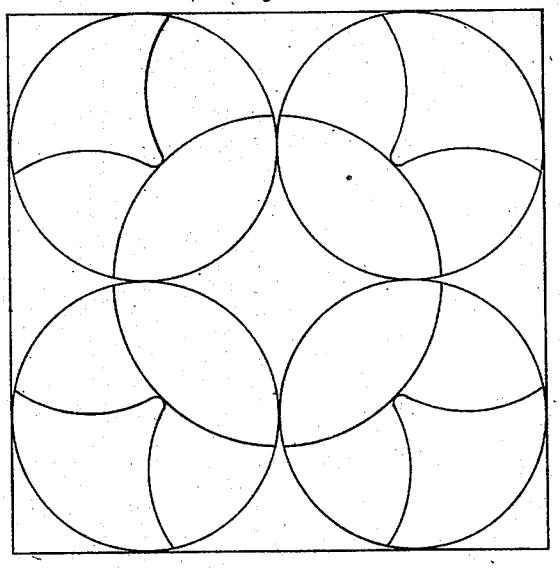


*Fig. 3.*



WITNESSES:-
Louis La Farge
Roger O'Riordan

INVENTOR:-
John La Farge

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

(No Model.) 2 Sheets—Sheet 2.

# J. LA FARGE.

## MANUFACTURE OF COLORED GLASS WINDOWS.

No. 274,948. Patented Apr. 3, 1883.

*Fig. 4.*

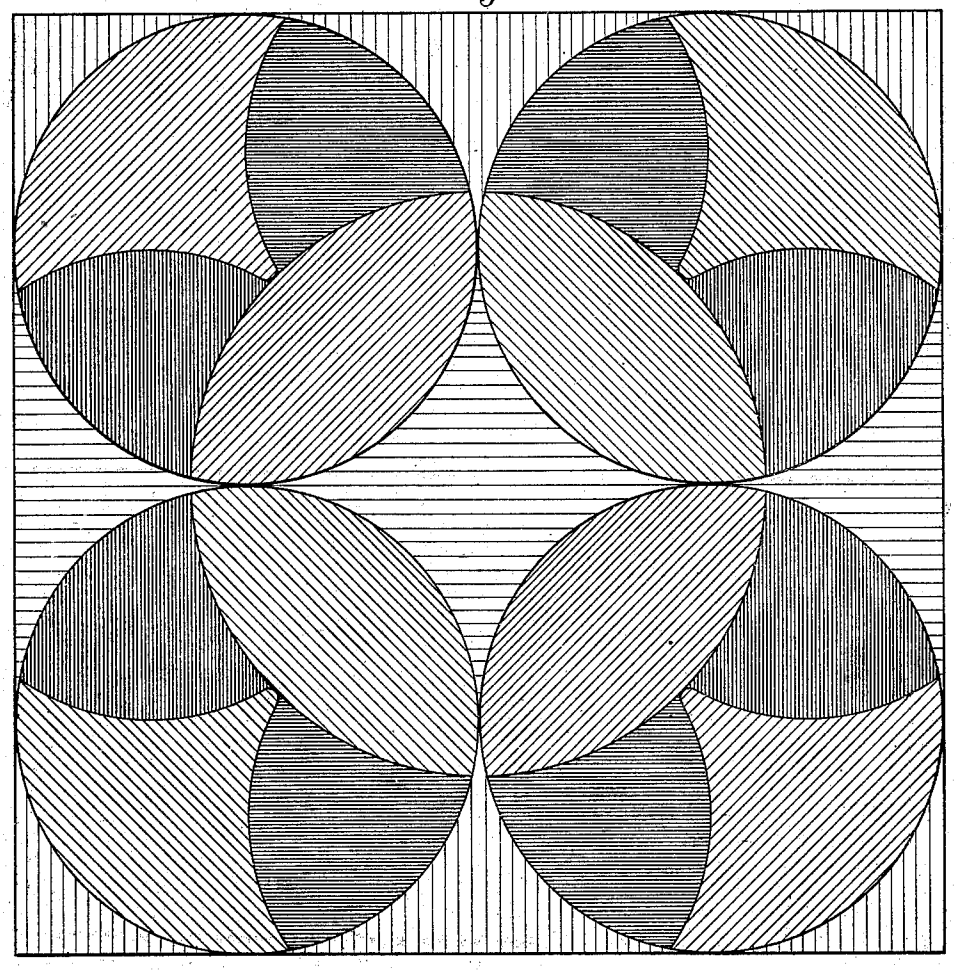
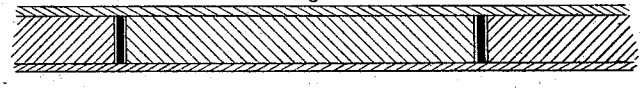


*Fig. 5*



*Fig. 6.*



WITNESSES:—

Louis La Farge

Roger O'Riordan

INVENTOR:—

John La Farge

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

# UNITED STATES PATENT OFFICE.

JOHN LA FARGE, OF NEW YORK, N. Y.

## MANUFACTURE OF COLORED-GLASS WINDOWS.

SPECIFICATION forming part of Letters Patent No. 274,948, dated April 3, 1883.

Application filed January 23, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN LA FARGE, of the city and county of New York, in the State of New York, have invented certain improvements in the manufacture of colored-glass windows and other decorative glass products, such as glass mosaic-work, wall-surfaces, tiles, lanterns, and analogous articles; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the drawings which accompany and form a part of this specification.

In these drawings, Figure 1 is a plan view of a portion of a colored-glass window made in accordance with the mode universally adopted prior to my invention. Fig. 2 is a section of the same portion of window, clearly showing the "leads" by means of which the segments of glass have heretofore been secured in position. Fig. 3 is a plan of the new method which I have invented of constructing and applying the frame-work or substitute for "leading," which secures the glass segments. Fig. 4 is a plan of a colored-glass window made according to my invention. Fig. 5 is a section of the same window, and Fig. 6 is a portion of a similar section enlarged, and designed especially to show the thin films or sheets of glass *a a*, which will be hereinafter particularly described.

In all the figures similar parts are denoted by similar letters.

The objects of my invention are, first, to provide a light metallic frame-work as a substitute for the leading hitherto universally employed for colored-glass windows and other decorative glass products, which, while firmly holding the glass segments, shall present as thin and light a top or end surface as is consistent with suitable strength, so as to interfere very slightly, if at all, with the artistic effect of the picture or design which forms the window or other article; and, second, to combine with the window or other decorative glass product so constructed a thin sheet or film of glass on either the front or back side of the picture or device, or on both sides of it, for the purpose both of binding the segments more firmly together and better protecting the glass-work from the action of the atmosphere and of rendering the picture homogeneous in all its parts, and thereby greatly increasing its decorative effect.

Prior to my invention the only mode of constructing colored-glass windows and analogous products has been to employ leads formed by casting bars of lead—such as are represented at *c c*, Figs. 1 and 2—with double flanges, as seen, and, after the glass segments or pieces to constitute the picture or device have been cut into the proper shapes, to bend these leads around the edges of the segments which are fitted into the space between the flanges, and then at all suitable points where the ends of different portions of the lead bars come together to solder them to hold the segments in position. The serious defect in this method is that in order to give the lead bars sufficient strength and the flanges sufficient hold upon the glass it is necessary to make them so wide or thick that when the picture or device is looked at they, so to speak, fill too much of the field of view, attract the eye too greatly, and in obvious ways seriously impair the artistic effect which the picture would otherwise produce.

It is to do away with this evil that the first part of my improvements is intended. To this end I dispense entirely with the lead bars and flanges and substitute for them a light metallic frame-work made in the form of the design or picture which the window or other decorative article is to present, and I secure the connecting parts of the frame by soldering or brazing, or in any convenient manner. The segments of differently-colored glass are then cut, molded, pressed, cast, or otherwise formed into the proper shapes to fill the different sections of the frame, and the various parts or divisions which are to form the finished window or other article being thus separately prepared, each division, of convenient size, may, if desired, be placed in the usual manner upon a suitable flat or curved surface, so that the glass segments may be set in position in the sections of the frame-work in accordance with the desired picture or design. The workman then sprinkles a little of any suitable flux, in powder, and also, preferably, some powdered white or colored glass, around the edges of all the glass segments and into the slight spaces, if any, which may happen to be left by the workman

or may otherwise occur between the edges of the segments and the frame-work. In this condition the work is put into a kiln or any suitable glass-furnace and exposed to sufficient heat therein to fuse the edges of the segments, and the powdered glass, when that is used, and unite them securely to and bind them firmly into the frame-work. By this means I enable the window or other structure, when finished and in place, to present the picture or device which forms it with the richest effect and almost entirely free from the disfigurement and artistic embarrassments which have characterized all previous colored-glass decorations of this nature.

To still further aid the artistic results of the work, I usually prefer to combine with the segments and frame-work a thin sheet or film of white or colored glass placed on both sides of the picture, or on only one, as may be desired. These sheets of glass may advantageously be about one thirty-second of an inch or somewhat more in thickness, and they are laid upon the upper and under surfaces, or upon either the upper or under surface, as the case may be, of the frame-work and segments, when the latter, with the usual plaster or other suitable base on which they rest, are put into the kiln or furnace, as above described, and while the edges of the segments are being fused the glass films will become partially melted, and will not only, on cooling, bind the segments and frame-work firmly together, but will also, when the work is properly done, cover both segments and frame-work with a thin, level, smooth film or surface of glass, which will tend materially to harmonize the different portions of the window or other structure and blend them into a homogeneous and artistic picture. Besides these advantages, the employment of the glass films will protect the work from the effects of the weather when it is placed in an exposed situation, as will often be the case.

In addition to the superior decorative results of my invention, it enables work of a high grade, which has hitherto been extremely costly, to be produced by less skillful workmen and in far less time than has before been possible, and hence greatly diminishes its cost.

Having thus described my improvements, what I claim, and desire to secure by Letters Patent, is—

1. The combination of the glass segments or pieces which form a colored-glass window or other decorative glass structure or product with a light metallic frame or frame-work for holding the segments in place, substantially in the manner and for the purpose set forth.

2. The combination of one or more thin sheets or films of glass with the segments and frame-work or leading of a colored-glass window or other decorative glass structure or product, substantially as and for the purpose described.

3. The method of making a colored-glass window or like decorative article, which consists in forming a light metallic frame-work in the form of the design or picture which the window or other decorative article is to present, forming the segments of glass, &c., into the proper shapes to fill the different sections of the frame, sprinkling the frame with a suitable flux, applying the glass thereto, and fixing by heat or otherwise, substantially as described.

JNO. LA FARGE.

Witnesses:
LOUIS LA FARGE,
ABRAM BERNARD.