

UNITED STATES PATENT OFFICE.

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LEADED GLASSWORK.

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The object of my invention is to provide leaded glass work essentially characterized and differentiated from that hitherto produced by the fact that the pictures made with

5 suitably stained glass pieces assembled together to constitute the leaded glass work are replaced wholly or partly by photographs.

My process is carried out in the following manner:

- 10 I prepare, either by enlarging or by contact printing, photographs on transparent supports, such as plates, films, etc.; and these photographs, after having been retouched, may be coloured in any suitable manner.
- 15 They may, however, be mere ordinary light and shade photographs to which any desired colour will be imparted, as hereinafter explained, by means of glass plates, stained or not, juxtaposed thereto.
- 20 Once this is done, I lay the photographs on a transparent table or frame and cut them up into as many pieces as there are colourings intended, such cutting being effected according to the conventional procedure adopted
- 25 for stained glass window making (pattern cards, tracings, diagrams and templets). As a matter of fact, I constitute with the said photographs the various templet-obtained elements which glass painters continue to call the "quarries" of a stained glass window.
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The same templets used for cutting up the photographs will serve for cutting suitably stained glass-pieces. They can also be used to cut up any gelatine sheets or fragments

35 deemed helpful, whether these carry a photographic image, or colour or any appearance whatsoever when imprisonment of several transparent elements between glass plates is contemplated.

- 40 The pieces of glass may be white or of the common greenish tint (i. e., without any special hue) when the photographic parts constituting the "quarries" have been given their own proper colors; on the contrary, the cut
- 45 up pieces of glass should be stained the desired hue if they are to impart the desired colouring to the photographs.

With each templet I cut up two pieces of glass, a front one and a rear one, and I apply

50 these two as accurately registering on one

another as possible with the transparent photograph in between. I then edge-join, by cold enamelling or any other means known to industrial practice, the two pieces of glass together with the object of protecting, as efficiently as practicable, against the action of

55 outer air the photograph or the like thus imprisoned between the two cut pieces of glass. Instead of inclosing the photograph between two glass plates, I may apply it on a single

60 plate and keep it in position thereon by any suitable means, say by pasting.

I next proceed either with provisional leading, as with ordinary leaded glass work, or with final leading. I then complete the

65 glass picture, as has been done hitherto, by applying to it a suitable frame (wood, aluminium, etc.) and supports (bars, rails, fastenings, etc.) to impart the required rigidity for setting up the picture and securing it in

70 the bay or opening where it is to stand.

As already stated, colour effects may be obtained either by means of the transparent photographs themselves, by toning, staining, painting, or any method of black or colour

75 printing whatsoever, or by means of the glass plates covering said photographs, or again by means of coloured pellicles or films inclosed in such glasses, or, indeed, by means of a combination of these two expedients. I

80 can juxtapose and cause to play on one another as many colours as the elements employed (glasses, photographic or other gelatines) offer surfaces.

By the expression photograph, I mean first

85 of all any reproduction obtained by photography, for instance: colour-photography. I may also replace photographs by mere lithographs, transfers, outline-drawings, brush or crayon drawings, etc.

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Such photographs and other above-mentioned drawings or designs, always made, of course, on transparent supports of films, may be varnished, rendered brilliant by the usual means, etc., or wrapped in any pellucid insulating material adapted to ensure maximum durability.

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Either of the two templet-cut glass plates, the front one or the rear one, or both of them, may be engraved, printed, painted, or

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slightly roughened or tinted for emphasizing the design. I can, of course, as with ordinary leaded glass work, use glass coloured in the mass, that is to say stained throughout its thickness, or use doubled glasses or lined glasses, that is to say pieces of glass surface-stained either on one or on both sides.

I wish it to be expressly understood that all the treatments in use both in the past and at present by glass stainers, painters, photographers, or stained glass imitators (diaphany, hyalochromy, vitrology, etc.) can be utilized and associated with my invention. The same applies to all modern industrial improvements, whether appertaining to glass-making or glass templet casting, or concerning photographs or any transparent pellicles or films, or regarding lead making and alloying, lead templet casting and imitations thereof by any appropriate means and more especially by aluminum or aluminum compounds.

Part or all of the pieces of glass or gelatine may also be done away with by covering the joint of the various coloured surfaces with any sort of lead or any imitation cast lead made of aluminum and applied in any way whatsoever. Said imitation leading may be stuck or secured on either of the glass plates inclosing the pellicle of film or pellicles or films and either on the front or on the rear plate. The latter possibility is pointed out with a view to popularize leaded glass work reproduction among people of moderate means.

I can also obtain by the same method reproductions of photographs on glass through using, as in photo-ceramics or burnt-in photography, bichromated gelatine or gum. In this case my process permits vitrification.

I operate as follows:

After having taken a photograph of the part of the leaded glass work offering one and the same colour, I prepare some bichromated gum or gelatine on, say, a glass backing. I then apply the photograph, printed on a transparent backing, on the bichromated layer, and I expose to the sun. Once this is done, I remove the negative which can be used again. I then sprinkle the bichromated gum or gelatine with coloured powder according to the well known processes of enamel photography, I bake in an oven, and thus obtain a coloured photographic reproduction of the leaded glass work first photographed.

I wish it to be clearly understood that I can do without vitrifiable powders and obtain a coloured photograph without baking.

Instead of using only one stained glass alone, I can use it in combination with front or rear glass plates adapted to impart any desired hue to the said glass, whether stained or not, or I can previously stain the glass in the course of its own manufacture.

The above described processes can, as will be easily realized, serve to obtain perfect reproduction of ancient stained glass windows as well as to make any kind of new leaded glass work.

By "leaded glass work," I mean not only leaded glass work proper, that is to say glass work intended to fill up bays or openings such as, say, church windows, but also smaller leaded glass work articles suitable to be illuminated by any source of artificial light and to afford artistic lamp shades, lamp cages, etc., etc.

The accompanying drawing shows a leaded glass window or panel representing the head of a Virgin, of XIIIth century period, Figure 1 being a front or face view thereof, and Fig. 2 a central cross-section on line 2—2, Fig. 1.

As illustrated in said drawing, the window or panel is made up of a multitude of the previously-mentioned glass quarries 3, of different shapes and sizes, cut according to the outlines of the design or picture and fastened together along their abutting marginal edges by means of a frame work of lead strips 4 of I-section, the whole being arranged in an outer or marginal frame 5 of U-section. The inner framework 4 and the outer frame 5 are rigidly connected together, integrally or otherwise, so as to conjointly form a single unit.

The quarries 3 are of duplex formation, as already explained; each quarry consisting of front and rear sections or pieces 3^a and 3^b of glass of counterpart size and shape, with an intermediate photographic section or templet 6. The latter may have any of the forms or characters described above, and the same is equally true of the quarry parts which may be stained, coloured, or otherwise ornamented or marked as desired. Both parts of a quarry may be of the same colour, or one may have one colour and the other may have a different colour or may be uncoloured, and the markings (if present) may appear on either part or on both parts and may be obtained in any of the ways specified herein. Certain of the quarries, however, may have the respective images baked in them, as when the image represents the features of a human or divine being; and in such case the quarry may consist of a single part of increased thickness. It is considered unnecessary to illustrate this modification, since it concerns a mere detail which is apparent from the foregoing.

I claim as my invention:—

1. A glass panel, comprising a multiplicity of structurally-separate, transparent quarries, each consisting of coloured, transparent front and rear sections of the same shape and dimensions and a transparent pellicle interposed between the sections of each quarry and conforming thereto in shape and

dimensions, each such portion of pellicle having a photographic image formed on it; and a supporting structure of lead joining the different quarries together along their 5 abutting marginal edges. parent front and rear sections of the same shape and dimensions and a photographic 10 image vitrified on one section; and a supporting structure of lead joining the different quarries along their abutting marginal edges.

2. A glass panel, comprising a multiplicity of structurally-separate, transparent quarries, each consisting of coloured, trans-

In testimony whereof I affix my signature.
GEORGES LE ROY.