

UNITED STATES PATENT OFFICE.

LÉON DUMONT TOURNEL, OF PARIS, FRANCE.

VITREOUS MOSAIC.

SPECIFICATION forming part of Letters Patent No. 523,387, dated July 24, 1894.

Application filed July 19, 1893. Serial No. 480,939. (No model.) Patented in France August 16, 1892, No. 223,682.

To all whom it may concern:

Be it known that I, LÉON DUMONT TOURNEL, of the city of Paris, France, have invented a new kind of Vitreous Mosaic, (for which I have obtained Letters Patent in France for fifteen years, dated August 16, 1892, No. 223,682,) of which the following is a full, clear, and exact description.

This invention relates to the manufacture of a new kind of vitreous mosaic by covering a glass surface previously painted in grisaille or vitrifiable color with smaller pieces of colored glass. These small pieces may be either of so called English or French glass or of any other manufacture whether thin, thick or of intermediate quality, and of all colors whether colored throughout or superficially and they are assembled together according to a given design so as to produce upon a glass support a transparent mosaic. This process enables the most diverse colors to be applied to the same piece of glass and its principal application is in the manufacture of painted or stained glass windows and other panels formed of pieces of plain glass cut out to shape and fixed in lead frames in the ordinary manner, these pieces of glass bearing the mosaic decoration above referred to. The configuration of the leaden network or frame having been determined from a drawing as commonly practiced for painted or stained glass windows, paper templates are cut out for each piece of glass to be used as a support for the mosaic. These supporting pieces of glass cut out according to the paper templates are generally white or slightly tinted green, yellow, &c., but they may be of a deeper color which in that case will predominate and will be accentuated and variegated by the diverse colors of the cubes and pieces composing the mosaic. These supporting pieces are assembled together in the leaden frames or "comes" and are painted in grisaille as for an ordinary painted glass panel. After being painted they are removed from the leaden frames and laid flat upon a table for the reception of the mosaic work. This is performed by applying to the supporting pieces, pieces of glass of all shapes and sizes cut out with the diamond from sheets of glass of various colors or broken up, the operator being guided in the arrangement of the lines and colors by a

copy of the artist's design. In this work regard is to be had also to the lines and modeling of the grisaille or neutral shading painted on the supporting plate which also plays a part in the ultimate combined effect. The work having been completed in order to avoid disarrangement of the elements of the mosaic, which would occur by the least shock, before they are fired, the marginal elements of the mosaic are fixed to the supporting pieces by means of gum arabic, gum tragacanth, or its equivalent, and the firing is effected under the same conditions as for ordinary painted glass panels in a muffle or other furnace the degree of firing being determined by experience.

It is essential to success that the cubes and other pieces of glass constituting the mosaic be caused to adhere wholly to the supporting pieces of glass which is effected according to the nature and composition of the glass employed, by various degrees of firing of which two may be defined by the result produced: First. A firing just sufficient to cause the elements of the mosaic to adhere to the supporting plates. Second. A stronger firing, sufficient to round off the angles of the elements of the mosaic.

It is obvious that instead of applying the elements of the mosaic upon only one face of the supporting glass which has been painted on, they may be fixed to both sides thereof by the aid of a flue at a much lower temperature or otherwise.

The work may be fired one or more times and having been cooled and removed from the furnace the interstices or spaces between the elements of the mosaic are filled with mastic or cement which fulfills the same decorative effect as that used in setting mural mosaics.

In order to construct the colored glass panel it is only necessary to assemble the pieces thus prepared and fix them in leaden frames in the ordinary manner of constructing stained glass windows.

Having described in a general way the process of manufacture, I will now point out how it may be varied or modified.

In carrying out the manufacture of the vitrified mosaic all the resources of ordinary glass painting are of course available; includ-

ing the use of silver yellow, enamels, &c., and the mosaic may be applied to unpainted supporting plates where the combined effect of the glass painting and mosaic is not required.

- 5 More than one layer of mosaic may be applied to the same supporting plate either by superposing one mosaic layer upon another or by applying the mosaic to both sides of the supporting plate.
- 10 The glass employed for the mosaic should be carefully selected and a sample of each should be tested by a preliminary firing in order to make sure that the tint does not become altered in the operation. It is preferable to use flint-glass for the purpose. In the event of broken pieces or of cubes or pieces failing to adhere to the supporting plate in consequence of being insufficiently fired as may happen in the case of glass of hard quality or by reason of accident due to humidity in the furnace the work may be fired a second time at a sufficient heat to reweld it, and the operation may be facilitated by means of a flux.
- 25 Mention has been made of the application of the process to the production of vitreous mosaics for painted glass panels producing brilliant effects when viewed by transmitted light. By this process figures, flowers and decorations or ornaments of all kinds may be produced. These panels may be viewed with and against the light and may be made to produce a double effect by the use of gold and platinum. The process is also applicable to
- 35 the partial decoration with vitreous mosaic

of stained or painted glass, or in the form of enrichment for medallions or surroundings for painted glass work.

The vitreous mosaics may be of any form and be fixed in lead frames in the ordinary way of fixing the elements of stained or painted glass panels broad lead strips being employed as for fixing thick glass, but they may be otherwise fixed by the employment of plaster, iron, wood or other means.

The process may be applied to the decoration of sheet and plate glass of any required dimensions and of any kind.

I claim—

1. The process of making mosaic which consists in painting a glass plate in vitrifiable colors, fusing vitrifiable particles to said painted plate and to each other, so as to leave interstices between said vitrifiable particles, and filling in said interstices so formed with cement, substantially as and for the purposes specified.

2. As a new article of manufacture, a mosaic consisting of a painted glass plate, vitrifiable particles fused thereto and to each other, and having the interstices between said particles filled with cement, substantially as and for the purposes specified.

The foregoing specification of my new kind of vitreous mosaic signed by me this 22d day of June, 1893.

LÉON DUMONT TOURNEL.

Witnesses:

ROBT. M. HOOPER,
ALBERT MOREAU.