Feb. 16, 1937. W. H. SPENCER ET AL 2,071,240

METHOD OF MAKING SIGN PLATES AND LIKE ORNAMENTAL PANELS

Filed Jan. 29, 1936

Fig. 1.

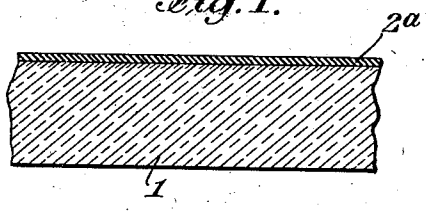


Fig. 2.

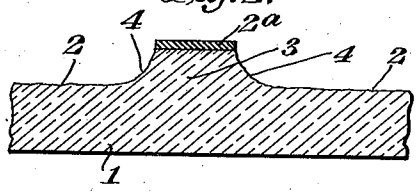


Fig. 3.

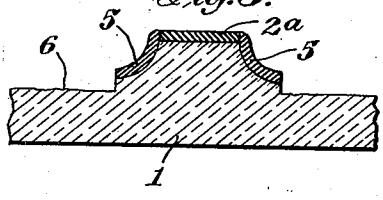


Fig. 4.

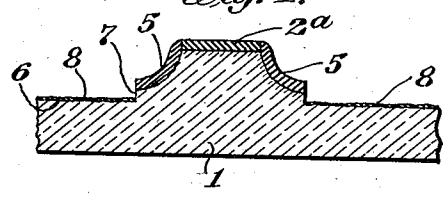


Fig. 5.

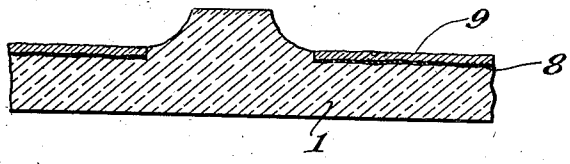
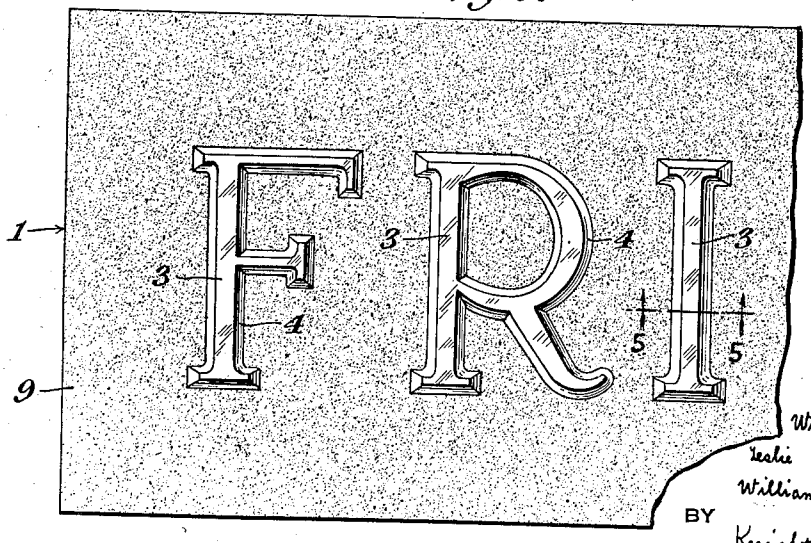


Fig. 6.



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METHOD OF MAKING SIGN PLATES AND LIKE ORNAMENTAL PANELS

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Application January 29, 1936, Serial No. 61,258

9 Claims. (Cl. 41—21)

The present invention relates to the manufacture of sign plates and like ornamental panels and more especially contemplates an improved method for making devices of the character shown, described and claimed in our copending application Serial No. 11,222 which was filed in the U. S. Patent Office under date of March 15, 1935. The drawings of our above-identified copending application show an integral plate of light-transmitting material such as plate glass with lens-like portions left by an excavating operation forming characters in relief protruding from an opaque background preferably formed by an electroplating operation on a depressed background left by a sand-blasting operation. The sign plate shown on the drawings of said application produces striking effects on the eye of a distant observer due to the polished transparent top surfaces and translucent sides of the lens-like letters which stand out in bold illuminated relief on a non-luminous background of subdued tone.

The general purpose of our invention is to provide an improved method for making ornamental panels such as the plate glass sign shown and described in our above-identified application.

One purpose of our invention is to provide an improved method whereby sign plates of somewhat similar character to that shown in U. S. Patent No. 1,525,107 to W. H. Spencer, may be rendered more discernible and ornamentally pleasing to the eye of a distant observer. According to this Spencer patent, the letters of the sign plate were formed by residual portions of the original surface of the plate glass remaining after intervening areas of the surface had been roughened preparatory to the electrolytic deposit of metal forming the background for said letters. Due to the method of making sign plates according to the above-identified Spencer patent, the residual surfaces of the plate glass are closely bordered by an irregular line of metal which materially reduces the light-transmitting capacity of the letter-forming areas of the plate glass and thus reduces its visibility to the eye of a distant observer. For the purpose of overcoming these drawbacks while at the same time providing enhanced ornamental effects in devices of this character, our present invention contemplates a primary excavation of the light-transmitting slab to produce the desired design in relief and to provide translucent side walls to the relief characters; the temporary placement of layers of resist on the translucent side walls for preserving their form and light properties during subsequent operations on the slab; the trimming of said resist layers to establish a definite border line at the base of the bevelled side walls; a secondary excavation of the slab around the trimmed edges of the resist layers on the bevelled side walls of the letters to form a barrier at the common base of the relief characters; and preventing the electrolytic deposit of metal on the bevelled side walls of the characters in relief. It will be understood that while a sand-blast has been referred to as the agent employed for the primary and secondary excavating operations, other suitable agents may be employed for this purpose.

Our invention has been illustrated in the drawing in an adaptation to the construction of a plate glass sign provided with letters which stand cut in bold relief from an electroplated roughened background, said letters being provided with roughened bevelled sides and with polished top surfaces formed by residual portions of the original surface of a color-flashed slab of plate glass.

In the drawing

Figure 1 is a fragmentary section of a plate glass slab with a flashed layer of colored glass at the top and with a resist sheet applied to the top surface thereof.

Figure 2 is a fragmentary section of the plate glass slab at the conclusion of the primary sand blast excavation around portions of the slab which are to form a design in relief.

Figure 3 is a fragmentary section similar to Figure 2 after the bevelled side walls of the relief design have been covered by a special resist composition for protecting the bevelled side walls of the relief design from injury during the secondary sand-blast excavation as well as for excluding the conductive coating from said bevelled side walls while preparing the depressed background area for the electrolytic deposit of metal.

Figure 4 is a fragmentary section similar to Figure 3, showing the plate glass slab after the secondary sand-blast operation has been completed and the conductive coating applied to the roughened surface left by the secondary sand-blast operation.

Figure 5 is a fragmentary section on the line 5—5 of Figure 6.

Figure 6 is a face view of one end of the completed ornamental panel in the form of a plate glass sign.

According to Figure 1 of the drawing, a slab 1 of plate glass has been covered by a sheet 2a of resist which is to be cut away around and exterior to portions of the plate glass surface which

are to form the top smooth surfaces of the letters shown in Figure 6. Said portions having been cut away, the uncovered surface of the plate glass is exposed to a primary sand-blast or other excavating agency until the roughened areas **2** surrounding the residual lens-like portions **3** have been depressed to the desired extent. At the conclusion (exhibited in Figure 2) of this primary excavating treatment, the lens-like portions **3** are left with concavely bevelled side wall surfaces **4** which merge outwardly into the roughened areas **2** and eventually constitute the translucent side walls of the finished letters. For the purpose of protecting the bevelled side walls **4** of the letters during the secondary excavating treatment, said walls are covered by a suitable protective covering **5** which is sufficiently resistant to the sand blast to protect the bevelled walls and to maintain a sharply defined border line outside of which the secondary excavating treatment is to be performed; which preferably adheres with sufficient closeness to the bevelled walls to prevent access thereto of the subsequently applied conductive coating; and which also can be removed readily either before or after the electroplating or other suitable treatment for forming an opaque covering to the depressed roughened background. After the layers **5** have been applied to the bevelled walls as shown in Figure 3, the outer edges of said layers are trimmed to sharply define the borders of the outwardly bevelled walls of the letters from the surrounding areas which are to be treated by a secondary excavating treatment to provide a depressed roughened background. The secondary sand blast is then applied around the outer borders of the resist layers **5** to form a depressed roughened background area **6**, Figure 3, within which the lens-like bodies of the letters are sharply defined by abrupt shoulders **7**, resulting from the trimming of the lower edges of the resist on sharply defined lines free from the contour irregularities of the depressed roughened background areas. The background areas **6** are next to be covered with an opaque layer of material which is preferably done by an electroplating operation. For this purpose, a conductive layer **8**, Figure 4, is applied to the roughened background areas after which the prepared panel is placed in an electroplating bath for depositing the metal plate background **9**, Figure 5.

We claim:—

1. The method of forming an ornamental panel, which method consists in forming on one face of a light-transmitting plate, protruding lens-like bodies provided with flat top surfaces and roughened bevelled side walls, while protecting predetermined areas of the plate which are to form the top surfaces of said bodies, in applying a protective covering to the roughened bevelled side walls of the lens-like bodies, in trimming said protective covering to determine the basal outline of said bevelled side walls, in excavating those portions of the plate surrounding the trimmed edges of said protective covering to provide a depressed background area defined from the basal edges of said lens-like bodies by abrupt shoulders, in treating the depressed background area to render it opaque, and in removing said protective covering.

2. The method of making an ornamental panel which method consists in forming a light-transmitting plate with a lens-like character provided with roughened bevelled side walls protruding from one side of said plate, while protecting a predetermined area of the plate which is to form the top surface of said character, in applying a protective layer to the roughened bevelled side walls of said lens-like character and trimming the edges of said protective layer to define the marginal basal edges of said lens-like character in the finished panel, in subjecting said plate to a sand-blast excavation for depressing the general surface of the plate surrounding said marginal basal edges of the lens-like character, and in rendering the depressed general surface of the plate opaque.

3. The method of forming an ornamental panel, which method consists in subjecting one face of a light-transmitting plate to a primary excavating operation to form protruding lens-like bodies provided with flat top surfaces and roughened bevelled side walls, while protecting predetermined areas of the plate which are to form the top surface of said bodies, in applying a protective covering to the roughened bevelled side walls of said lens-like bodies, in trimming said protective covering to conform to a desired basal outline of the roughened bevelled side walls of said lens-like bodies, in further excavating portions of the excavated areas surrounding the trimmed edges of said protective covering to form abrupt shoulders around the bottom edges of said side walls and to provide a depressed background area surrounding said shoulders, and finally in applying an opaque layer to the depressed background area prior to removing said protective covering.

4. The method of forming an ornamental panel, which method consists in subjecting one face of a light-transmitting plate to a primary sand-blasting operation around protected areas for forming lens-like portions provided with flat top surfaces and roughened bevelled side walls, in applying a layer of sand-blast resist to said side walls of the lens-like portions, in trimming said resist layer to conform to the basal outlines of said lens-like bodies, in subjecting those portions of the plate surrounding the trimmed layer of sand-blast resist to a secondary sand-blasting operation to form a depressed background area to the lens-like portions of the plate, in applying an opaque layer to the depressed background area, and finally in removing said sand-blast resist from the roughened bevelled side walls.

5. The method of making an ornamental panel, which method consists in subjecting one side of a glass plate to a primary sand-blasting operation for reducing its thickness around protected areas of its surface by an amount substantially equal to the depth of a desired lens-like character which is to protrude from the general surface of the finished panel, in applying a layer of sand-blast resist to the side walls of the lens-like character, in trimming the layer of sand-blast resist to define the marginal basal edges of said lens-like character in substantially the general surface left by the primary excavation, in subjecting the reduced thickness portions of said plate to a secondary sand-blasting operation for further reducing the thickness of the plate over that portion of its surface surrounding said marginal basal edges of the lens-like character, and in rendering the general surface left by the secondary excavation opaque.

6. The method of forming an ornamental panel, which method consists in protecting parts of the sight side of a permanent flat-surfaced base of light-transmitting material which are to form the top surface of lens-like bodies, subjecting

such sight side to a primary sand-blasting excavation for forming lens-like bodies provided with flat top surfaces formed by residual surface portions of the permanent base and with roughened concavely bevelled side walls due to the sand-blasting excavation, in applying a layer of resist to the roughened side walls of the lens-like bodies, in trimming the outer base edges of said resist to conform to the desired basal outlines of the roughened side walls of the lens-like bodies, in subjecting the sand-blasted areas surrounding the trimmed edges of said resist layer to a secondary sand-blasting excavation to form a depressed background area defined from the basal outlines of said side walls by an abrupt shoulder conforming to the trimmed edges of said resist layer, and in metallizing the roughened sand-blasted background area surrounding said shoulder.

7. The method of forming a plate glass sign from an integral slab of plate glass, which method consists in covering a portion of one face of the plate glass slab with sand-blast resist shaped to conform to the top surface of a lens-like relief character to be formed in said slab, in subjecting the uncovered areas of the plate glass to a primary sand-blasting operation for reducing the thickness of portions of the plate glass slab corresponding to said uncovered areas and to form lens-like bodies of glass protruding above the general surface of the reduced thickness portions and provided with roughened concavely bevelled side walls merging below into said general surface of the reduced thickness portions, in protecting the roughened side walls by sand-blast resist so limited as to sharply define a basal line outside of which a secondary sand-blasting treatment is to be performed, subjecting the portion of the slab of reduced thickness outside of said basal outline to a secondary sand-blasting operation to cause a further depression of the surface of the slab outside of said basal outline, said sharply defined basal line being free from the contour irregularities of the further depressed portion, and in electroplating the general surface of the reduced thickness portions surrounding said lens-like relief character to the level of said defined basal outlines.

8. The method of forming a plate glass sign from an integral slab of plate glass, which method consists in subjecting one face of the plate glass slab to a primary sand-blasting operation while protecting predetermined areas of the plate glass slab which are to form the top surface of a lens-like relief character to be formed in said slab, portions of the plate glass slab surrounding the lens-like relief character being reduced in thickness while said lens-like relief character is provided with roughened concavely bevelled side walls merging below into the general surface of the reduced thickness portions, in subjecting the reduced thickness portions of the plate glass slab to a secondary sand-blasting operation for further reducing its thickness while protecting and defining said roughened side walls between said top surface and a predetermined marginal border lying substantially in the general surface of said portions of reduced thickness, and finally in rendering the general surface of the reduced thickness portions of the plate glass slab opaque, the predetermined marginal border being sharply defined and free from the contour irregularities of such reduced thickness portions.

9. The method of forming a plate glass sign from an integral slab of plate glass, which method consists in covering a portion of one face of the plate glass slab with sand-blast resist shaped to conform to the top surface of a lens-like relief character to be formed in said slab, in subjecting the uncovered areas of the plate glass to a primary sand-blasting operation for reducing the thickness of portions of the plate glass slab corresponding to said uncovered areas and to form lens-like bodies of glass protruding above the general surface of the reduced thickness portions and provided with roughened concavely bevelled side walls merging below into said general surface of the reduced thickness portions, in applying a protective layer of sand-blast resist to said roughened side walls, in trimming the bottom marginal edges of said protective layer to define the basal outlines of the side walls substantially in the general surface of said portions of reduced thickness, in subjecting the reduced thickness portions of the plate glass slab to a secondary sand-blasting operation for further reducing the thickness of said reduced thickness portions and forming an abrupt shoulder for defining the basal outlines of said roughened side walls, in applying a layer of electrolytic conductor to the surface of the slab portions surrounding said abrupt shoulder, and finally in electroplating said conductor.

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