F. A. WALTER.

METHOD OF FORMING DESIGNS BY ELECTRODEPOSITION.

APPLICATION FILED SEPT. 28, 1907.

924,020. Patented June 8, 1909.

FIG. 1

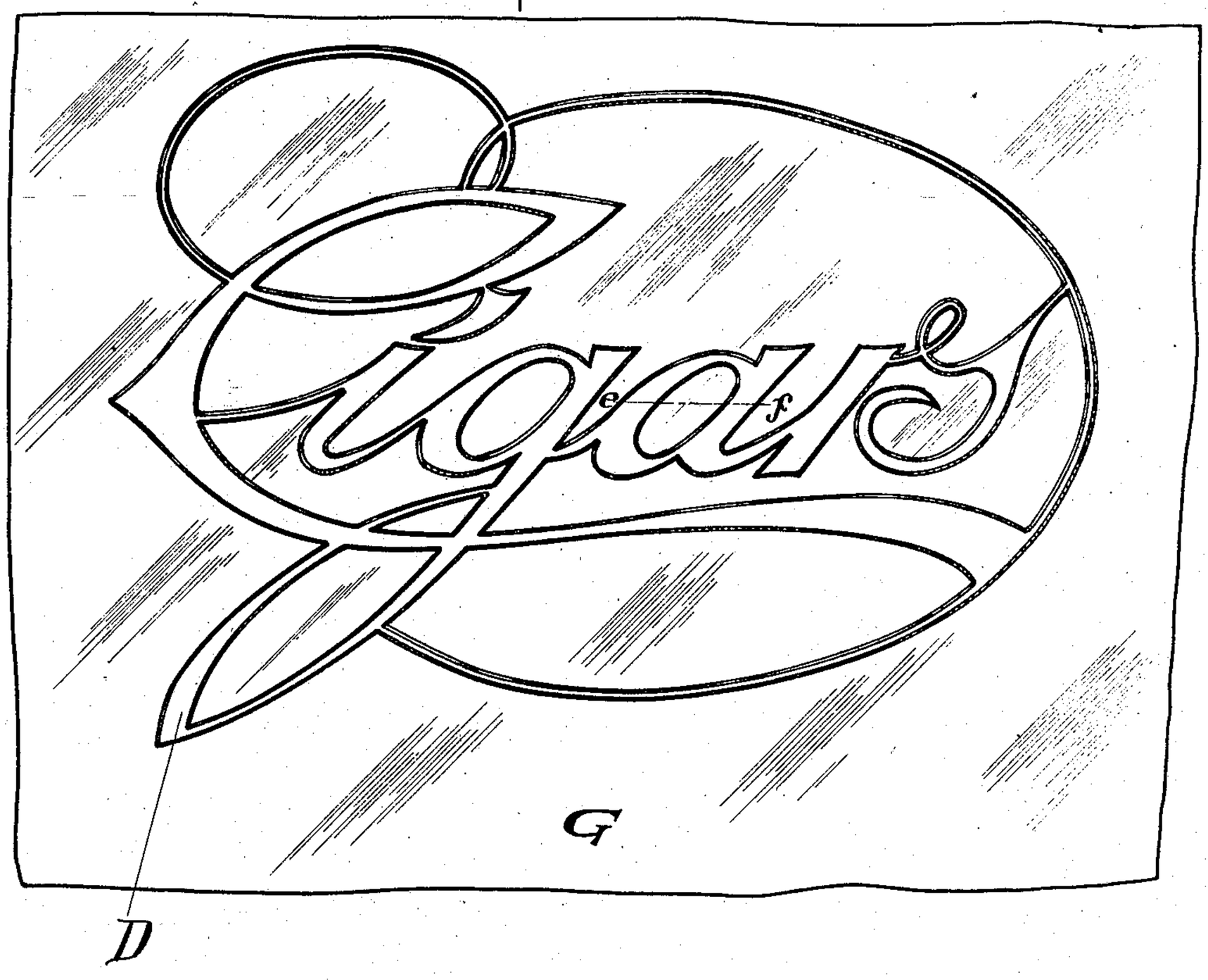


FIG. 2

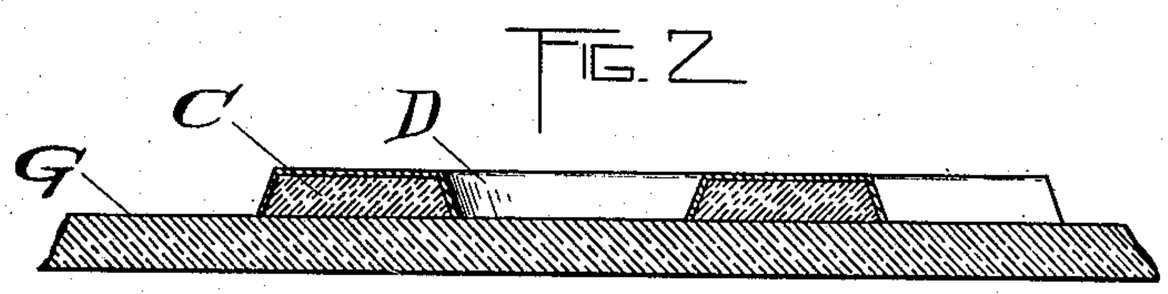
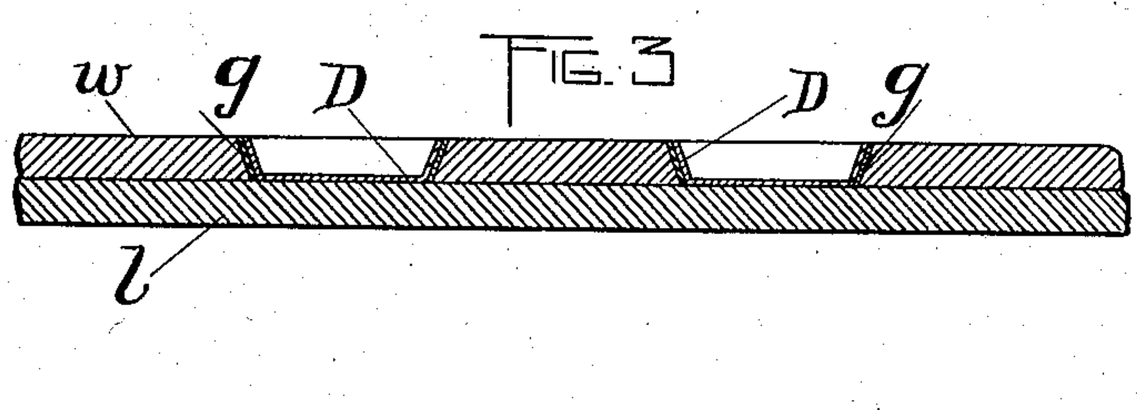


FIG. 3



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METHOD OF FORMING DESIGNS BY ELECTRODEPOSITION.

No. 924,020. Specification of Letters Patent. Patented June 8, 1909.

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To all whom it may concern:

Be it known that I, FRITZ ALBIN WALTER, a citizen of the United States, and a resident of Rochester, in the county of Monroe and State of New York, have invented a new and Improved Method of Forming Designs by Electrodeposition, of which the following is a specification.

This invention relates to signs of that class in which a formed-up letter of considerable thickness is secured to a suitable background, such, for instance, as glass or like material.

The purpose of my present invention is to overcome the difficulties heretofore experienced on account of the weight of the letters of such a sign when formed of metal, to provide such a sign in which the characters shall be of minimum weight and an efficient and economical method of constructing the characters and also means for maintaining the proper alinement of the letters while they are being assembled and secured to the background.

It is often difficult, in attaching the letters of such a sign to the background, to maintain perfect alinement, and as I prefer to use letters and connecting members each having a very thin shell and a cavity therein which may be used for receiving the cement, by means of which it is attached to the background, I have found it very desirable to connect a number of such letters together by means of suitably ornamental scrolls or like features of ornamentation, such connecting features also serve to brace or stiffen, as well as support in proper alinement, the connected letters in handling and attaching them to the backing.

While I usually prefer to attach the letters to the background with the hollow sides thereof toward the background, still, I do not limit myself to such an arrangement.

In order that the letters of my sign may be as light as possible, I prefer to form them by electro-deposition, and in order that the form or mold for such electro-deposition may be made as cheaply as possible and admit of repeated use, I have devised the following method for producing the mold for the letters or characters of my sign and also of producing such sign therefrom.

I take a suitable metallic plate, preferably of lead and preferably also presenting a smooth and true surface uppermost, and upon this I spread a layer of wax, of suitable consistency, and usually to uniform thickness or depth, the depth of the wax being substantially the depth of the characters or letters to be formed. On this wax I lay out the letters of the sign and the connecting members in negative and remove the wax over the space covered by such characters and connecting members down to the lead plate. I prefer to give the edges of the letters a slight bevel in order to provide a sufficient draft for the ready removal of the letters when formed by electro-deposition and also to give a pleasing effect to the completed sign so that the letters and connecting members thereof shall have beveled edges. The edges of the wax left upon the plate and forming the edge of the letters around the outline of the sign and the connecting members are then suitably coated with graphite or other conducting powder, which may also be spread over the exposed surface of the lead plate without injury to the sign.

The mold thus formed is inserted in an electro-plating bath and when properly connected up and the current is turned on, the metal of which the letters are to be formed, such as copper, is electro-deposited over the surface of the exposed portions of the lead plate and the edges of the wax comprising the outline of the sign, such electro-deposition forming a thin shell of copper, the thickness of which may be regulated in the usual way common to electro-plating. When the electro-deposition has taken place to a sufficient extent to form letters having walls of the desired thickness, the mold is removed from the bath and the completed sign is readily removable from the plate and mold.

The accompanying drawings illustrate a sign comprising the word "Cigars" having the letters thereof connected and formed by electro-deposition in the manner described in accordance with my invention and attached to the background of glass, by means of cement filling the cavity of the letters and connecting members.

The drawings are as follows:

Figure 1 shows such a sign in face view as attached to a plate of glass. Fig. 2 shows in sectional view a portion of the sign, as for instance, the letter "a," taken along the line *e*—*f* of Fig. 1. Fig. 3 shows in a similar sectional view the same portion of the sign just after its formation by electro-deposition upon and within the mold therefor.

Similar characters refer to similar parts throughout the several views.

Referring to the drawings, G is a plate of glass, to which the connected letters forming the legend or sign "Cigars" are attached by means of cement filling the cavities on the rear sides of the letters. The letters of this sign are all connected, as will be seen and an inclosing scroll of pleasing conformation is formed for connecting the extreme ends of the sign and bracing the parts. I may add that such connecting members aid also in securing a more uniform electro-deposition of the metal forming the walls of the shell-like letters of the sign.

Referring to Fig. 2, D is the electro-deposited metal comprising the walls of the letters and connecting members. G is the plate of glass, to which the letters D and their connecting members are secured by means of cement C filling the cavities on the rear sides thereof.

Refer now to Fig. 3. 1 is the lead plate, the upper surface of which may preferably be smooth and over this lead plate 1 there is spread a layer of wax *w* to such a depth, preferably uniform, as it is desired to give the letters and connecting members of the sign. It will of course be understood, however, that the depth of the wax may vary at different points to give greater or less depth to different parts of the sign, as desired. On the upper surface of the wax the sign is laid out in negative and the wax removed down to the lead plate 1 and to the contour of the completed letters and connecting members. It is important that the edges of the wax remaining upon the plate and around the removed portions be beveled to provide a sufficient draft for the ready removal of the sign and such a bevel may also be sufficient to give to the completed letters and connecting members appreciably beveled edges. The edges of the wax around the cavities formed therein by the removed portions are coated with graphite or suitable conducting powder *g*, which may also, when desired, be extended over the exposed surface of the lead plate. The coating of graphite *g* on the exposed portions of the lead plate is so very thin compared with that upon the wax as to render it almost inappreciable and for that reason it is not shown in Fig. 3. The lead plate and the wax comprising the mold is then inserted in an electro plating bath and the current turned on and the desired metal D, forming the walls of the letters and connecting members, is deposited by electro deposition and this process is allowed to continue until the desired thickness of wall for such letters has been secured, when the current is turned off and the mold is removed from the electro plating bath and the completed sign is readily removable from the mold. The exposed surface of the characters may then be polished or coated by electro deposition with any suitable metal, as nickel, silver or gold.

What I claim is:—

1. The within described method of forming a design by electro deposition, which consists in providing a mold comprising a base plate of conducting material having spread thereover a layer of non-conducting material removed from such base plate to form therewith a matrix of the design bottoming on such base plate and having sides formed by the edges of the non-conducting material left on the plate, such cavities coated with conducting material and forming the design by electro deposition upon such coating of conducting material and the bottom plate forming the base of such mold.

2. The within described method of forming a design by electro deposition, which consists in providing a mold comprising a base plate of conducting material having spread thereover a layer of plastic and non-conducting material, such plastic and non-conducting material removed from such base plate to form a matrix therewith or the design bottoming on such base plate and having sides formed by the edges of the plastic and non-conducting material left on the plate, such cavities coated with conducting material and forming the design by electro deposition upon such coating of conducting material and the bottom plate forming the base of such mold.

3. The within described method of forming a design by electro deposition, which consists in providing a mold comprising a base plate of conducting material having spread thereover a layer of plastic material, such plastic material removed from such base plate to form therewith a matrix of the design bottoming on such base plate and having sides formed by the plastic material left on the base plate rendered conductive and in electrical connection with the base plate and forming the design by electro deposition upon such plastic material and the bottom plate forming the base of such mold.

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