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ELECTROLYTIC STENCIL

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Fig. 1 is a schematic diagram of a marking stencil form. It is a rectangular form divided into several sections. At the top, there are three main columns: 'JOB NO.' and 'CUSTOMER' on the left, 'DESCRIPTION' in the center, and 'MARKING ORDER NO.' and 'CUSTOMER'S ORDER NO.' on the right. Below the 'DESCRIPTION' column is a large rectangular area containing the text 'PART N°000' and 'DATE 8-1-43'. To the left of this area is a vertical section labeled 'MARKING RECORD CARD set Typewriter on "STENCIL"'. Below the large rectangular area is a section labeled 'MARKING INSTRUCTIONS:'. At the bottom of the form, there are three fields: 'Final Inspector:', 'Marker', and 'Date'. Numbered callouts 5, 6, and 7 point to the top edge of the 'DESCRIPTION' column. Callout 8 points to the 'MARKING RECORD CARD' section.

Fig. 1

Fig. 2 is a schematic diagram of a marking stencil with a ruler. It is a rectangular form with a ruler at the top. The ruler has markings from 10 to 50. Below the ruler is a large rectangular area containing the text 'PART N°000' and 'DATE 8-1-43'. To the right of this area is a vertical section labeled 'PLACE THIS SIDE TO PAD. PLACE PART TO BE MARKED ON OPPOSITE SIDE.' Numbered callouts 1, 2, 3, and 4 point to different parts of the stencil: 1 points to the top edge, 2 points to the ruler, 3 points to the left edge, and 4 points to the right edge.

Fig. 2



Fig. 3

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ELECTROLYTIC STENCIL

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2 Claims. (Cl. 101-128.2)

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This invention relates to stencils and more particularly to stencils of a kind that are adapted for use in electroetching and electroplating operations.

In my application filed of even date herewith, entitled "Method and apparatus for indelibly marking articles," I have disclosed a method and apparatus for making permanent markings upon bodies that are either permanently or temporarily conductive by electrolytic action wherein such articles are etched or etched and plated through a stencil bearing the design or inscription which it is desired to imprint. The present invention relates to stencils for use in such method and with such apparatus and distinguishes from conventional types of stencils in that instead of being impervious to ink or acids alone, except in the areas constituting the designs or inscription, it is also resistant to the conduction of electricity and other action of electrolysis such as attends the operation of marking in accordance with this invention. The stencil is essentially a dielectric shield relieved in the local areas of the pattern to be marked.

In its primary aspects the stencil is composed of a body or mat of fibrous material, which is pervious to solutions capable of carrying electric current. Superposed upon such fibrous material, on one or both surfaces thereof, is a dielectric coating which, in addition to being resistant to acids and bases which comprise the electrolytes with which it will be used, is also capable of being displaced in accordance with markings, inscriptions, patterns or designs so as to render the coating pervious at such local areas for the purpose of permitting electrolytic action therethrough.

It is an object of the present invention to provide a dielectric stencil which may be inexpensive to fabricate and which will afford sharp definitions of design or inscription when the latter is impressed thereupon.

It is another object to provide such a stencil which is resistant to acids and bases employed in electrolytically marking articles and yet which will allow electrolysis to ensue through the relieved portions constituting the design or inscription.

It is a further object to provide an electrolytic stencil carrying certain indicia for reference with respect to margins etc. in placing the inscriptions or designs.

It is another object to provide a card for mounting such stencil preparatory to cutting or impressing the inscription or design, which card, in addition to providing a mat or yielding surface

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against which the latter may be carried out, affords a sheet upon which the marking or inscription may be duplicated, as by the interposition of carbon paper between the stencil and backing, and thus to preserve for final record the character of the marking thus authorized.

Reference is now made to the accompanying drawing in which,

Fig. 1 is a plan view of a typical stencil mounting card made in accordance with the present invention;

Fig. 2 is a plan view of a stencil showing the one form of indicia that may be imprinted thereon for placement of the marking, and

Fig. 3 is a representation of the carrier fabric or mat upon which the stencil coating material is disposed.

Referring now more particularly to the drawing, the stencil shown in Fig. 2 is composed of any pervious cloth which may be woven or matted, similar to that shown in Fig. 3. In order to give support to the shielding coating of the stencil, which might be isolated from adjacent shielding portions by the pattern that is cut out, this fabric is preferably in the form of a long fiber felt composed of silk, nylon or other material having good resistance to acids and bases. Rayon is not suitable for this purpose because it is unstable when wet. Although felting has been proved desirable in this usage, woven fabrics, so long as they are reasonably pervious, may serve as well.

A film of nitrocellulose is coated upon such a carrier fabric of which that shown in Fig. 3 is representative, and after this latter film has set an additional coating composed approximately of four parts beeswax and one part paraffin dissolved in a suitable solvent, is spread upon the nitrocellulose coating and allowed to dry thereon.

The webs prepared in this manner may be cut into suitable sizes, as is represented at 1 in Fig. 2 either before or after indexing 2 for lateral placement and indexing 3 for vertical placement has been printed or embossed upon the stencil. Areas 4 may be demarked for engagement by the clamps shown and described in the apparatus of my co-pending application referred to above.

Such a stencil as indicated in Fig. 2 may be conveniently carried upon the card shown in Fig. 1, which comprises a sheet of paper, cardboard or other suitable material 5 having a central portion 6 for receiving a copy of the inscription or design impressed upon the stencil. The stencil will be fastened to the card as indicated by the broken lines 7 and between the stencil and the card there will be applied a sheet of carbon paper or other

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suitable duplicating medium so arranged as to transfer any design or inscription impressed upon the stencil upon the card for record purposes. A hole 8 may be provided for engagement with the centering pin in apparatus designed for marking the stencils. Any suitable legends similar to those shown may be included on the card.

In using such a stencil, the card, together with its carbon paper and stencil sheet affixed thereto by glue or staples, may be inserted in an ordinary typewriter which is used without the printing ribbon to cut any desired inscription upon the stencil. A hand stylus or ordinary relief-type printing may be used for marking the stencil.

The stencil is then removed and applied as explained in my copending application while the card with the carbon paper removed is ready to be filed for the permanent record.

In making such stencils, cellulose acetate and analogous substances which are prone to disintegrate in caustics such as are needed for marking aluminum and brass, should be avoided. The nitrocellulose and wax coating referred to above has proved most satisfactory, although other coatings such as those of the synthetic and natural resins, asphalt or plastic material of suitable dielectric strength may be used as well.

From the foregoing it will be seen that my invention relates to a dielectric stencil as distinguished from stencils applied for screening ink or etchants without the application of electric current. Many modifications will occur to those

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skilled in the art which, while departing from the letter of this specification, will still fall within the spirit of the invention as set forth in the attached claims.

I claim:

1. A stencil for use in electro-etching metal surfaces comprising a thin carrier web coated with an acid resistant dielectric film, a card of paper or the like to which said web is detachably secured along one edge, a sheet of carbon paper or the like interposed between said card and web also detachably secured to said card along one edge, said web being composed of a felted material having long fibres and having a nitrocellulose covering thereon and an electrolyte resistant coating covering said nitrocellulose coating.

2. A stencil for use in electro-etching metal surfaces comprising a thin carrier web coated with an acid resistant dielectric film, a card of paper or the like to which said web is detachably secured along one edge, a sheet of carbon paper or the like interposed between said card and web also detachably secured to said card along one edge, said web being composed of a felted material having long fibres and having a nitrocellulose covering thereon and an electrolyte resistant coating covering said nitrocellulose coating, said card being considerably larger than said stencil so as to provide space at opposite sides of said stencil to receive suitable indicia.

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