July 6, 1954 E. E. FRANZ 2,682,687

METHOD OF MAKING INDICIA PLAQUES

Filed May 11, 1950

FIG. 1

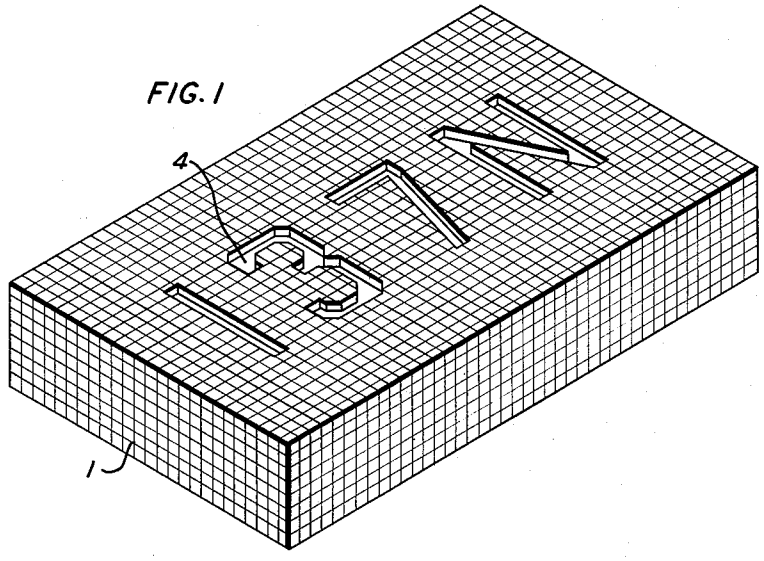


FIG. 2

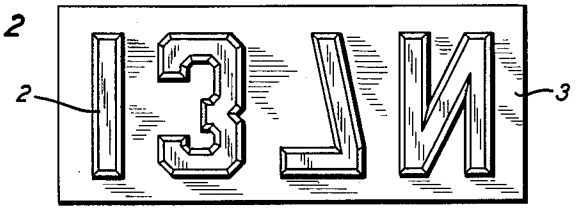
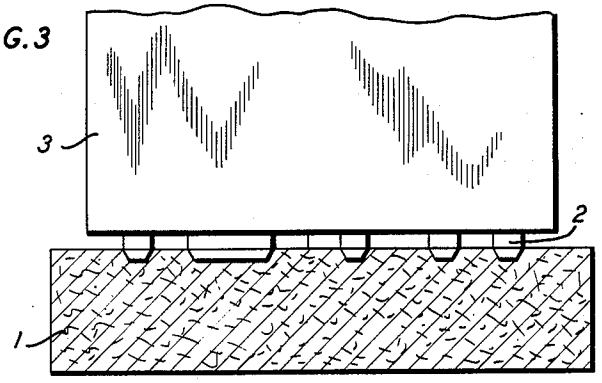


FIG. 3



INVENTOR
E. E. FRANZ
BY W. C. Parnell
ATTORNEY

Patented July 6, 1954

2,682,687

UNITED STATES PATENT OFFICE

2,682,687

METHOD OF MAKING INDICIA PLAQUES

Erwin E. Franz, Cranford, N. J., assignor to Western Electric Company, Incorporated, New York, N. Y., a corporation of New York

Application May 11, 1950, Serial No. 161,284

2 Claims. (Cl. 18—47.5)

1

This invention relates to the marking of indicia and more particularly to the engraving of indicia on resinous material by means of a heated die.

Existing methods of providing an engraved marking usually involve filling the engraved surface with a contrasting pigment, such as white lead in oil or a pigmented wax. In the so-called "hot stamping" process, the marking pigment is coated on the bottom of a paper sheet, and a die is used to simultaneously depress the surface and stamp the depressed surface with the pigment. Although these methods are adequate, there has been a need for a simple, economical method of providing an engraved surface which would not require the addition of a pigment to fill the engraved portion, and it is an object of this invention to provide such a method.

Applicant accomplishes his object according to the invention by making parts to be marked of a resin such as those in the thermosetting polyester group, the resins used being colored with a dark dye and filled with a light colored shredded asbestos. When a heated die designed to produce the desired marking is pressed against the resinous part, the resin and dye in contact with the die are disintegrated. The asbestos which remains in the area of contact produces a light colored impression contrasting with the dark color of the main resin body, thus obviating the necessity of a filling pigment for setting off the marking.

Other objects and features will be apparent from the following detailed description taken in conjunction with the attached drawing in which:

Fig. 1 is a perspective view of the resinous part after the required marking has been stamped thereon;

Fig. 2 is a bottom plan view of the marking die;

Fig. 3 is a front elevational view partly in section, showing the marking die in contact with the resinous part.

With reference to the drawing, the piece part 1 which is to be marked is composed primarily of a resinous material, such as any of the thermosetting polyester resins. The resinous material is then mixed with a filler having a white or gray color or other light color, such as shredded asbestos, the asbestos filler serving to add mechanical strength to the combination. To this mixture is added a quantity of a dark dye, such as boneblack, to give a dark color to the resin. The compound is then molded to the form required for the piece parts.

When it is desired to mark the parts 1, they are brought into contact with the marking die 2,

2

mounted or formed on a marking block 3. The die may be formed in any suitable manner capable of creating an engraved impression in the resinous part 1 such as the marking shown in Fig. 1.

When the die, which has been heated to a temperature of approximately 140 degrees C., is pressed against the part 1, it causes the resinous material and the boneblack in contact with the heated surface of the die to disperse or disintegrate. This leaves only the light colored asbestos 4 in the engraved portions, as the asbestos is not affected by the heated die action. After the die has been pressed into the part for the desired distance, it is withdrawn, leaving the engraved image or indicia in the light colored asbestos which contrasts vividly with the dark color of the surrounding resinous compound with its boneblack dye. In the deeper impressions, it may sometimes be desirable to blow away the disintegrated resin and dye powder to bring out the color contrast more clearly.

Applicant is unable to account for the disintegrating action which takes place in the polyester resin and the boneblack, leaving only the asbestos image where the heated die has been applied. However, the invention lies in the discovery that the coaction of a heated die and a resinous compound composed of elements as described will result in a sharply contrasting engraved marking, and is independent of the theory underlying the apparent disintegration of the resin and dye coloring. Applicant has discovered that the invention works well with thermosetting resins of the polyester type, for example, but will not work with phenolic resins, such as Bakelite. It is essential therefore that the resinous material and dye used have a chemical structure which will disintegrate when brought into contact with a heated die.

As a result of various experiments carried out in connection with this invention, it has been determined that best results are obtained if the die is heated to a temperature of between 120 to 160 degrees C. If too low a die temperature is used, the resinous material will take longer to heat to the point of disintegration, and there will be a tendency for the operator to press the die too hard against the part to speed up the marking which will result in chipping of the resinous compound. A low temperature may also result in an incomplete engraving. If the temperature is too high, the impression loses its sharpness and becomes ragged, particularly where the die figures are small.

It has also been discovered that better impres-

sions are made if the impression edges of the dies are made with a flat block type shape rather than with a V-shape. Use of the block type die avoids bulging and raising of the sides of the impression, as sometimes occurs with a V-shaped die surface when the initial heat is insufficient to disintegrate the resin. It also requires less penetration of the part to be marked, and provides a better color contrast because of its wider impression.

By means of the invention, it is possible to place engraved type indicia onto resinous parts in a fast, economical manner, without requiring the addition of a pigment filler. The method is well adapted to mass production techniques, which accentuates the possible saving in cost. In addition to serving as an element in the process, the use of shredded asbestos mixed with the resinous material also reduces the overall cost since it is usually cheaper than the polyester resin.

It is to be understood that the above described arrangements are simply illustrative of the application of the principles of the invention. Numerous other arrangements may be readily devised by those skilled in the art which will embody the principles of the invention and fall within the spirit and scope thereof.

What is claimed is:

1. The method of making indicia in a thermosetting resin body of the polyester class comprising homogeneously mixing the resin of a given color with an asbestos filler contrasting in color to the resin, molding the mixture into a form of a given thickness and applying to the form an object, having a contour of the indicia to be made, under a given pressure and heated to a given temperature jointly sufficient to disintegrate the resin for a given depth in the form in the area engaged by the object leaving the indicia with clearly visible surfaces of the asbestos filler.

2. The method of making indicia in a thermosetting resin body of the polyester class comprising homogeneously mixing the resin with a dye and an asbestos filler contrasting in color to the dye and resin, molding the mixture into a form of a given thickness and applying to the form an object, having a contour of the indicia to be made, under a given pressure and heated to a given temperature jointly sufficient to disintegrate the resin for a given depth in the form and dye in the area engaged by the object leaving the indicia with clearly visible surfaces of the exposed asbestos filler.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
2,221,984	McKay	Nov. 19, 1940
2,224,852	Lowry	Dec. 17, 1940
2,243,736	Loblein	May 27, 1941
2,269,521	Darrah	Jan. 13, 1942
2,420,614	Norman	May 13, 1947

FOREIGN PATENTS

Number	Country	Date
446,162	Great Britain	Apr. 24, 1936
510,719	Great Britain	Aug. 4, 1939