Oct. 1, 1946. J. T. PENTON 2,408,578

METHOD OF STENCILLING

Filed Dec. 18, 1942

Fig. 1.

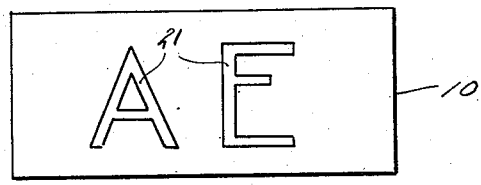


Fig. 2.

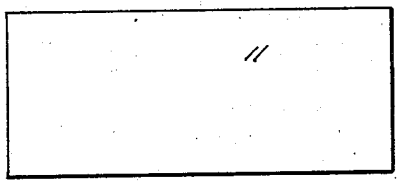


Fig. 3.

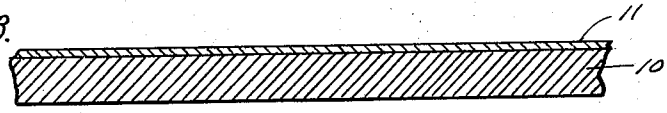


Fig. 4.

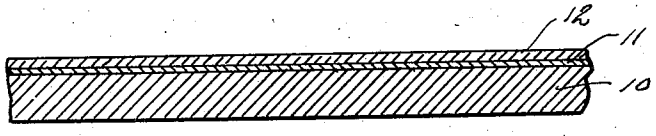


Fig. 5.

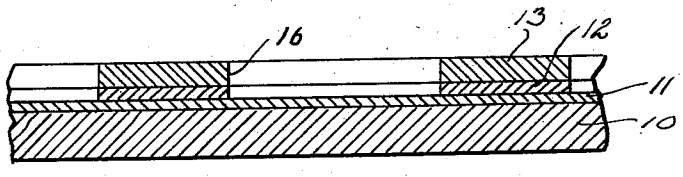


Fig. 6.

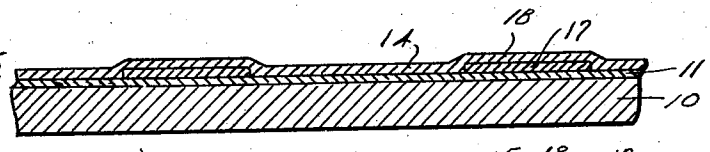


Fig. 7.

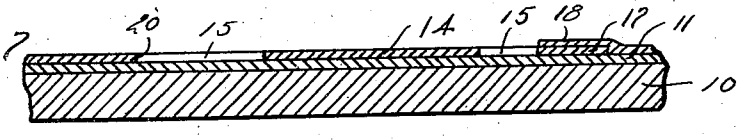
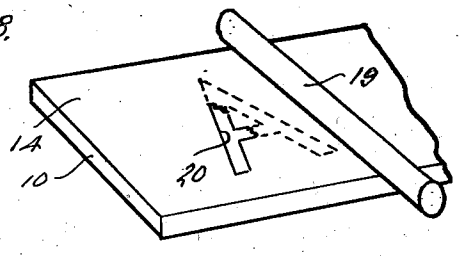


Fig. 8.



Inventor
Joseph T. Penton
by A. Hillyard
Attorney

Patented Oct. 1, 1946 2,408,578

UNITED STATES PATENT OFFICE

2,408,578

METHOD OF STENCILING

Joseph T. Penton, Pasadena, Calif.

Application December 18, 1942, Serial No. 469,389

9 Claims. (Cl. 117—8.5)

1

This invention relates to the production of designs, decorations, and indicia such as characters, numerals, etc. and relates more particularly to methods for stenciling. A general object of this invention is to provide a simple, commercially practical and particularly effective method for making stenciled signs, stenciled decorations, etc.

Another object of this invention is to provide a method for stenciling in which standard and permanent screens or stencils may be employed from time to time for short runs or for extended production, making it unnecessary to cut temporary stencils or screens for each run and making hand work unnecessary in the case of even very short runs.

Another object of this invention is to provide a method of the character mentioned in which the stencil is not wet with paint, color or other material, and remains dry throughout the entire process so that it does not require repeated cleaning and so that it cannot smear or otherwise damage the work.

Another object of this invention is to provide a stenciling method that results in the production of clear, distinct, regular lines, a clean uniform ground and clean uniform designs, characters or letters.

Another object of this invention is to provide a stenciling method that employs a resist or masking material that dries without flaking or caking to be readily removable, as by brushing, to assure regular clean-cut lines.

A further object of this invention is to provide a method of the character referred to including a novel step for removing the dry resist or masking material as the final operation or step of the method.

The various objects and features of my invention will be fully understood from the following detailed description of a typical manner of carrying out the method of the present invention, throughout which description reference is made to the accompanying drawing, in which:

Fig. 1 is an elevation view of an article or sign made in accordance with the invention. Fig. 2 shows the board or backing following the application of the ground coat. Fig. 3 is an enlarged fragmentary sectional view illustrating the ground coat on the board, backing or body. Fig. 4 is a view similar to Fig. 3 showing the masking material on the ground. Fig. 5 is a view similar to Fig. 4 with the screen or stencil in place showing the resist or masking material removed from certain portions as determined by the stencil. Fig. 6

2

is a view showing the final coat applied over both the ground and the remaining masking material. Fig. 7 is a view similar to Fig. 6 showing some of the masking material removed to expose the ground at the stenciled areas, and Fig. 8 is a fragmentary, perspective view illustrating the manner in which the masking material may be removed to expose the ground at the stenciled areas.

The method of the present invention may be carried out in the production of various articles and in the making, ornamenting, marking, etc. of numerous structures, devices and materials. In the following detailed description I will describe the invention as employed in the production of a sign, or the like. It is to be understood that this is merely a typical illustrative application of the method and is not to be construed as limiting or restricting either the scope or the application of the invention. In the drawing the subject or object to be stenciled is represented as a board, or the like, which will be termed the body 10. The body 10 presents a flat smooth outer surface that is clean and suited to receive paint, color or a finish of the kind required.

The method of the present invention may be said to comprise, generally, the steps of: providing a suitable ground 11 on the body 10, applying a resist or masking material 12 over the ground 11, removing a portion or portions only of the mask 12 by the aid of a stencil 13, applying an outer coat 14 and then removing the remaining masking material 12 and that portion of the outer coat 14 which covers said remaining masking material to expose portions 15 of the ground.

The ground 11 may be provided on the surface of the body 10 in any selected or practical manner. In fact, the ground 11 may be any selected finish for the body surface that is to receive and retain the outer coat 14. For example, the ground 11 may be the direct smooth surface of the material constituting the body 10. In the case illustrated it will be assumed that the ground 11 is a layer or coat of paint or other finishing and covering material that dries to present a surface suitable for the reception of the masking material 12 and the outer coat 14. The ground 11 is preferably smooth and water proof, or at least water resistant. In the present case it will be assumed that the ground 11 covers the entire upper or outer surface of the body 10. The material constituting the ground 11 may be brushed on, sprayed on or may be provided on the body 10 by dipping. The device or body 10 may be subjected to heat to expedite the drying of the

ground coat. In some instances it may be found desirable to employ sheet material as the ground 11, in which case such sheet material is secured on the body 10 by adhesive or by other appropriate means.

The provision of the resist coat or masking coat 12 is important. The masking coat 12 is a temporary covering or layer of material that may be readily removed by brushing, blowing, or the like, when it has set and dried. The masking layer 12 may be sprayed on, brushed on or applied by dipping and preferably covers the entire ground 11 or at least the entire area in which the stenciling operation is to be carried on. The composition or physical character of the masking layer 12 is a novel feature of the invention. In accordance with the invention the masking layer 12, when dried, is friable, being composed of a fine powder or solid material in a comminuted state and yet is self-sustaining. This layer of divided, powdered or granular material is uniform in texture and is not caked or flaked and is such that it may be brushed off in defined areas, as will be later described. The masking layer 12 or the material of the layer is such that it does not soften, attack, permanently color or otherwise injure the ground coat or ground 11. I have found it practical to employ porcelain enamel as the masking material, this porcelain enamel being composed of ground glass, a small percentage of clay and just sufficient water to constitute a vehicle to assist in the application of the material. It will be apparent that other divided or comminuted materials or granular materials and mixtures of the same may be employed to constitute the friable masking layer 12, for example, chalk, sand and mixtures of the same may be employed with any suitable binder or vehicle. In any case the liquid or vehicle employed is such that it does not attack or injure the ground coat 11 and is such that it dries or evaporates to leave the solid matter of the masking material 11 in a dry powdered or divided self-sustaining friable body or layer. The masking material is preferably applied to form an even layer or covering over the ground 11. The masking material is permitted or caused to dry and it may be found desirable to subject the unit to a suitable degree of heat to increase the rate of drying of the masking layer. It is preferred to thoroughly dry the masking layer 12. When dried the masking layer 12 is a fragile but self-sustaining covering or layer which is made up of divided or granular material and is without flakes, lumps or cakes.

Subsequent to the completion of the masking operation a selected stencil 13 is applied over the masking layer 12. It is contemplated that a stencil 13 of permanent character or of any selected or available kind may be used and, of course, the stencil may be designed to produce any figure, word, pattern, letter, ornamentation, or the like. In the case illustrated, the stencil 13 is a flat member such as a sheet of brass, or the like, having openings 16 in the shape of the letters 21, which are to appear on the finished stencil or work. The stencil 13 is laid over the masking layer 12 in the required position and is held firmly in place without movement. While the stencil 13 is so held the portions of the masking layer 12 exposed or made accessible through the openings 16 are removed. In practice the portions of the masking layer 12 exposed through the openings 16 of the stencil 13 may be easily and quickly removed by merely brushing away

the exposed material. The divided or powdered material constituting the fragile friable layer 12 is readily brushed away through the openings 16 of the stencil. This brushing operation is carried on in such a manner that the portions 17 of the material 12 which are covered or screened by the stencil 13 remain undisturbed. Where the masking material 12 is made up of finely divided or finely ground material, and where the layer is completely dried, as above described, the exposed portions of the layer 12 are brushed away leaving sharp definite margins or edges for those portions 17 which remain under the stencil 13. In this connection it is important to note that there are no cakes or flakes which might break out under the stencil or which might protrude from the edges of the stencil openings 16 to leave ragged, irregular edges of the remaining mask portions 17. Following the material-removing operation or brushing operation just described the stencil 13 is removed. This is done in a careful manner so that the remaining masking material portions 17 are undisturbed.

The outer coat 14 is applied subsequent to the removal of the stencil 13. This operation is performed in such a manner that the remaining portions 17 of the masking material 12 are undisturbed. In practice I have found it desirable to spray on the final coat 14. Further, in some cases I have found it desirable to give the sign, board or device, a light spray coat particularly over those areas carrying the masking material portions 17. This light coat of paint, or the like, does not penetrate or strike through the material at 17 to reach the ground 11 and does not produce disintegration of the masking material but, on the other hand, forms a protective or retaining skin over the remaining bodies of masking material. The light initial spray or spray coat is permitted to dry for a short time to form an effective protective and sustaining cover for the remaining portions 17 of the masking material, whereupon the spraying is continued to complete the coat 14. The coat 14 is preferably a paint, or the like, which dries hard and which properly adheres to the ground coat 11. The entire exposed surface of the ground coat 11 may be sprayed with the finish coat or outer coat 14. The islands or portions 17 of the masking material form or produce elevations 18. These elevations 18 are clearly illustrated in Fig. 6 of the drawing, where it will be seen that the outer coat 14 covers the masking material parts 17 and the latter produce or cause the elevations 18. Thus, it will be seen that the powdered or comminuted material constituting the portions 17 is trapped or sealed under the outer coat 14.

I may prefer in some applications of the invention to moisten the work prior to the application of the outer coat 14. The purpose of this wetting or moistening of the work is to place or provide moisture in the masking material portions 17 which are later trapped under the outer coat 14, as described above. In practice water or any other selected readily evaporated liquid may be sprayed across the face of the work before applying the outer coat 14 and the work may be dried, as by the application of heat, to remove the moisture from the exposed surfaces of the ground 11 and yet leave considerable liquid or moisture in the portions 17 of the masking material. When the portions 17 of the masking material contain or retain moisture at the time of application of the outer coat 14 the outer coat does not so readily adhere to the material of the

portions 17 and the paint or material of the outer coat 14 remains in a condition to be readily broken away. Furthermore, the liquid or moisture retained by the portions 17 may cause the material of the outer coat 14 to crack, chip or break free over the portions 17. This is particularly true if heat is used to quicken the drying of the outer coat 14. The heat generates steam or vapor in the portions 17 which steam or vapor breaks outwardly through the outer coat 14 forming cracks in the paint of the outer coat. This facilitates the following step or operation of the method.

When the outer coat 14 has thoroughly dried or has been thoroughly dried by the application of heat, as above described, the paint or material of the outer coat 14 is removed from the portions 17 of the masking material and the masking material that remains is brushed or wiped off to complete the stenciling operation. It is contemplated that the paint or material of the outer coat 14 may be removed from the portions 17 in any selected or practical manner. Fig. 8 of the drawing illustrates one manner of breaking free the outer coat material from the portions 17. A roller 19 is rolled back and forth across the surface of the work and suitable pressure is applied to the roller. This operation causes the paint or material of the outer coat 14 to crack and break loose on the elevations 18. Because the elevations 18 are above the level of the remaining surface of the work the roller 19 crushes the elevations 18 which are only supported by the portions 17 of the friable masking material layer. The roller 19 is rolled back and forth across the work a few times to break up the elevations 18 and the paint and material of the elevations is brushed or blown away. The friable masking material constituting the portions 17 does not adhere to the ground 14 but may be brushed or blown away together with the paint or material thus rolled free. In practice the paint or outer coat material constituting the elevations 18 breaks free from the outer coat 14 along regular defined lines 20, which outline or form the margins of the letters or characters 21.

When the elevations 18 and the portions 17 of the masking material are removed the ground 11 is exposed throughout the areas 15 to constitute the design, numbers, pattern or characters 21. In this connection it will be apparent that the ground 11 and the outer coat 14 may be different in color or nature so that the design, pattern or characters 21 are readily apparent. Figs. 7 and 8 of the drawing show portions of the elevations 18 removed or broken away and show the ground portions 15 exposed to constitute the pattern or characters 21. Subsequent to the above operations a final protective coat (not shown) of transparent material may be applied over the work if this is necessary or desirable.

It will be observed that the present invention provides a stenciling method in which the stencil 13 remains dry and in which a dry or drying masking material is utilized. The masking material 12 may be very inexpensive, is readily applied and is easily removed during the use of the stencil 13 and during the final operation when the ground portions 15 are being exposed.

Having described only a typical preferred manner of carrying out the method of my invention, I do not wish to be limited or restricted to the specific details herein set forth, but wish to reserve to myself any variations or modifications that may appear to those skilled in the art, or fall within the scope of the following claims.

Having described my invention, I claim:

1. The herein described method of coating an article comprising applying a ground coat, applying a friable layer to the ground to completely cover the ground, removing a portion of the layer to expose a portion of the ground, applying a color coat over the remaining portion of said layer and over the exposed portion of the ground, and then removing the remaining portion of said layer and the coat thereon.

2. The herein described method of coating an article comprising applying a ground coat, applying a friable layer to completely cover the ground coat, removing a portion of the layer to expose a portion of the ground by arranging a stencil over the layer and removing the portion of the layer which is left exposed by the stencil, applying a coat which is chromatically different from the ground over the exposed portion of the ground and over the remaining portion of the friable layer, and then removing said remaining portion of the layer and the portion of said coat thereon.

3. The method of stenciling on an article which includes applying a ground coat to the article, providing a friable layer completely over the ground, removing given portions of the layer by placing a stencil on the layer and then removing those portions of the layer which are left exposed by the stencil, removing the stencil, applying a coat which is chromatically different than the ground to cover the remaining portion of the friable layer and the exposed portion of the ground, and then breaking loose and removing the portion of said coat which covers said remaining portion of the friable layer.

4. The method of stenciling an article which includes providing a ground on the article, providing a friable layer completely over the ground, removing given portions of the layer by placing a stencil over said layer and removing the portions of the layer which are left exposed by the stencil, removing the stencil, applying a coat that will harden and which is chromatically different than the ground to the remaining portion of said layer and to the portions of the ground which were exposed by the removal of said given portions of said layer, breaking free the said coat after it has hardened where it covers the remaining portion of said layer, and then removing said remaining portion of the layer.

5. The method of stenciling an article which includes providing a ground on the article, providing a friable layer completely over the ground by applying to said ground comminuted solid material suspended in a liquid vehicle and causing the liquid to evaporate, removing given portions of the layer by placing a stencil on said layer and removing the portions of the layer which are left exposed by the stencil, removing the stencil, applying a coat which is chromatically different from the ground over the remaining portion of said layer and over the portions of the ground which were exposed by the removal of said given portions of said layer, allowing said coat to harden, breaking free the said coat where it covers the remaining portion of said layer, and then removing said remaining portion of the layer.

6. The method of stenciling an article which includes providing a ground on the article, providing a friable layer completely over the ground by spraying onto the ground finely divided solid matter in a liquid carrier and then

drying out said liquid, removing given portions of the layer by placing a stencil on said layer and removing the portions of the layer which are left exposed by the stencil, removing the stencil, applying a coat which will harden and which is chromatically different than the ground over the remaining portion of said layer an over the portions of the ground which were exposed by the removal of said given portions of said layer, allowing said coat to harden, breaking free the said coat where it covers the remaining portion of said layer, and then removing said remaining portion of the layer.

7. The method of stenciling an article which includes providing a ground on the article, providing a friable layer completely over the ground, removing given portions of the layer by placing a stencil on said layer and removing the portions of the layer which are left exposed by the stencil, removing the stencil, applying a coat which will harden and which is chromatically different than the ground over the remaining portion of said layer and over the portions of the ground which were exposed by the removal of said given portions of said layer, allowing said coat to harden, breaking free the said coat where it covers the remaining portion of said layer by operating a roller over the article, and then removing said remaining portion of the layer.

8. The method of stenciling an article which includes providing a ground on the article, providing a friable layer completely over the ground, removing given portions of the layer by placing

a stencil on said layer and removing the portions of the layer which are left exposed by the stencil, removing the stencil, maistening the remaining portions of said layer, applying a coat of different color value over said remaining portions of said layer and over the exposed portions of the ground, said coat being such as to harden upon being dried, subjecting said coat to heat to dry the same and to convert the moisture in said remaining portions of said layer into vapor which cracks and opens the parts of said coat which cover said remaining portions of said laer, and then removing said cracked portions of said coat and the said remaining portions of said layer.

9. The method of stenciling which includes providing a ground on the article to be stenciled, providing a friable layer completely over said ground by spraying thereon a divided solid in a liquid vehicle, removing a given portion of said layer by placing a stencil on the layer and brushing away the portions of the layer which are left exposed by the stencil, removing the stencil, spraying a coat of paint over the remaining portion of said layer and over the portions of the ground which were exposed by the removal of said portions of the layer, said paint being such as to harden upon being dried, allowing said coat to dry, removing the parts of said coat which cover said remaining portions of said layer, and then removing said remaining portion of said layer.

JOSEPH T. PENTON.