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G. C. JOHNSON, JR

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CHALK BOARD WITH GUIDE LINES AND METHOD OF MAKING SAME

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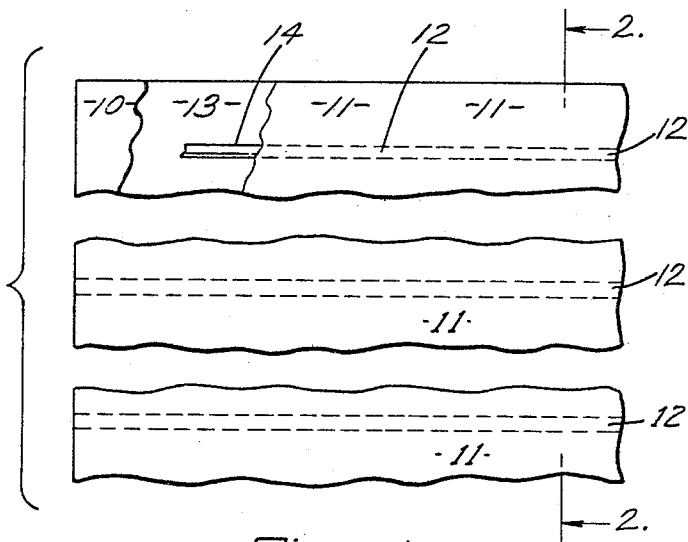


Fig. 1.

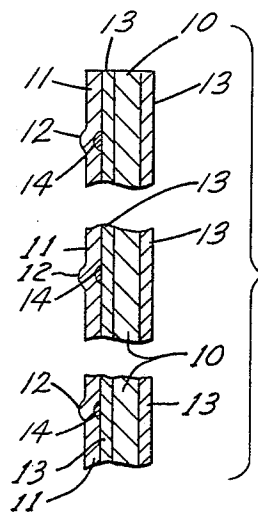


Fig. 2.

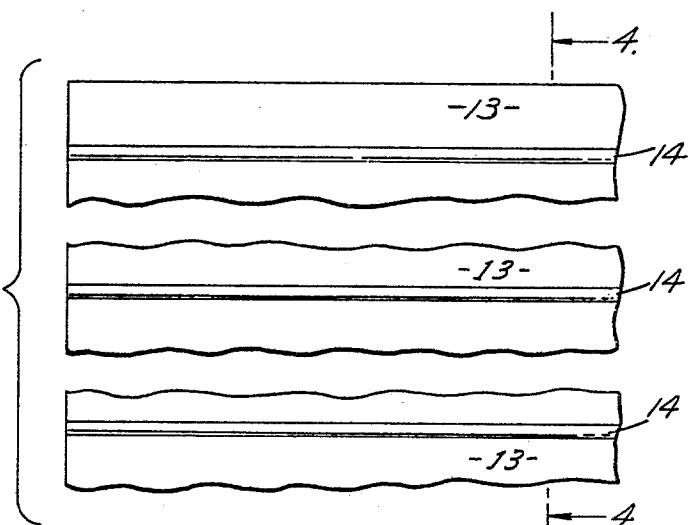


Fig. 3.

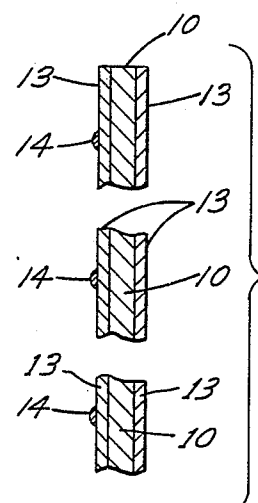


Fig. 4.

INVENTOR.

GEORGE C. JOHNSON, JR.
BY *Bosworth, Seelye,
Harrington & Cain*
ATTORNEYS.

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CHALK BOARD WITH GUIDE LINES AND METHOD OF MAKING SAME

George C. Johnson, Jr., Cleveland, Ohio, assignor to The
Enamel Products Company, Cleveland, Ohio, a corporation of Ohio

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8 Claims

ABSTRACT OF THE DISCLOSURE

A chalkboard having a porcelain enamel writing surface with raised guidelines, and a method of making chalkboards having raised guidelines in which the surfaces of the guidelines on the completed chalkboard are of the same color and composed of the same material as the remainder of the writing surface of the chalkboard, the guidelines being detectable by the user because they are raised slightly above the level of the remainder of the writing surface.

BACKGROUND OF THE INVENTION

This invention relates to chalkboards having guidelines as an aid to writing thereon and a method of making such chalkboards. More particularly, the invention relates to chalkboards having porcelain enamel writing surfaces, and to a method of making such chalkboards having writing surfaces that are provided with permanent guidelines.

The use and desirability of permanent guidelines as an aid to writing on chalkboards is well known. Heretofore guidelines have been placed on chalkboards by painting or scribing the lines thereon. The painted lines are always visible from a distance and in some applications may tend to confuse the chalkboard presentation to the viewer. In addition, the repeated erasing and cleaning of the chalkboard may eventually obliterate the guidelines. Scribed lines, which are used on slate chalkboards, are more permanent than painted lines, but they have a disadvantage in that chalk collects in the scribed lines each time one is written across, eventually forming a chalk line very difficult to erase. Chalkboards comprising metal sheets having porcelain enamel writing surfaces have many advantages over slate and are used extensively. Heretofore, however, there has been no satisfactory method of applying guidelines to porcelain enamel chalkboards since the material cannot be scribed in any practical manner.

SUMMARY OF THE INVENTION

A general object of the invention is to provide a porcelain enamel chalkboard having guidelines, which guidelines are permanent, will not collect chalk, and are virtually invisible to all except the chalkboard user. Another object of the invention is to provide a method for making a porcelain enamel chalkboard having guidelines with the above characteristics.

According to the present invention, the disadvantages inherent in painted or scribed guidelines are avoided by forming raised lines beneath the porcelain enamel writing surface of the chalkboard and thereby providing the writing surface with guidelines having a slightly different level from the remainder of the writing surface.

A preferred method of making chalkboards having guidelines consists of the steps of applying a porcelain enamel ground coat to one or both sides of a suitable metal sheet and firing the ground coat, placing lines upon the ground coat as by squeezing an enamel paste through a silk screen and again firing the sheet and finally apply-

ing a porcelain enamel finish coat over the entire surfaces and firing a third time.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 is an elevation of a chalkboard embodying a preferred form of the invention. This figure also illustrates, in one portion thereof, successive steps in the production of the board. In this and the other figures of the drawings the guidelines and the spacing between them and the thickness of the base sheet and the coatings on it are not necessarily shown to scale or in accurate proportion to each other.

FIGURE 2 is a sectional view of the chalkboard of FIGURE 1, taken along the line 2—2 of FIGURE 1.

FIGURE 3 shows the chalkboard of FIGURE 1 before the writing surface has been applied, and

FIGURE 4 is a sectional view taken along the line 4—4 of FIGURE 3.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown in FIGURES 1 and 2 of the drawings, a chalkboard embodying the present invention preferably comprises a steel sheet 10 that forms the base of the board and that is provided with the desired writing surface embodying guidelines. The writing surface is shown at 11 in the drawings and preferably comprises a coating of porcelain enamel that is made with a matte surface that has sufficient tooth to provide a surface that can easily be written upon with ordinary chalk. Porcelain enamel chalkboard surfaces of this type are well known. In the past, however, the enamel coatings have been flat, of uniform thickness and without guidelines.

According to the present invention guidelines 12, indicated by broken lines in FIGURE 1 and comprising raised portions of the writing surface 11 as shown in FIGURE 2, are provided. It will be noted that the writing surface 11 is continuous over the entire area of the chalkboard and that the guidelines are defined only by being raised slightly above the remainder of the surface of the board. In other words, the guidelines, when the chalkboard is in normal vertical position, project outwardly from the main writing surface of the board by a small amount to make them visible to a person writing on the board but, because of the fact that the writing surface 11 is continuous and the lines are of the same color and same material as the remainder of the surface, the guidelines themselves are invisible or nearly invisible to persons viewing the board from any substantial distance although they are clearly visible to a person writing on the board. The guidelines may appropriately have a width of about one-sixteenth inch and a thickness of, for example, about two-thousandths of an inch. The writing surface over the guidelines blends smoothly into the remainder of the writing surface without any sharp angles at the edges of the lines; for this reason it is possible to write or draw directly over the guidelines with little or no difficulty. Thus, chalkboards made according to the present invention have all of the advantages of conventional porcelain enamel chalkboards plus the advantage of the guidelines but without the disadvantages that have accompanied prior chalkboards embodying guidelines.

Chalkboards as shown in FIGURES 1 and 2 can be manufactured economically according to the method of the present invention. According to a preferred form of the method, each side of the base steel sheet 10 is provided with a porcelain enamel ground coat 13. The ground coat is produced in a conventional manner as by spraying the sheet 10 with enamel frit suspended in water and then firing the sprayed sheet at a temperature of about 1550° F., thereby fusing the frit into a smooth, hard surface. This step is conventional in the production of porcelain enamel chalkboards. Thereafter, base lines 14 which un-

derlie and create the raised guidelines 12 are produced on the ground coat on at least one side of the sheet. The base lines 14 are also formed in porcelain enamel and this operation preferably is carried out by squeegeeing a paste consisting of enamel frit in an oil base through a silk screen to leave a deposit on the ground coat in the width and at the locations and of the thickness desired for the lines. The frit used for the base lines has a lower fusing temperature than the ground coat. Thus, the frit is deposited in the preferred embodiment described herein to a width of approximately one-sixteenth inch and a depth of about two or three-thousandths of an inch. After the base lines 14 have been deposited, the sheet is again fired at a temperature which is sufficient to fuse the deposited frit without reboiling the ground coat. In the example given, a temperature of about 1350° F. is employed. After this operation, the chalkboard appears as shown in FIGURES 3 and 4 of the drawings.

Finally, the writing surface 11 is formed over the ground coat and base lines in a manner generally known in the art. For example, a porcelain enamel frit containing an abrasive such as silica or feldspar is suspended in a water vehicle and the mixture then sprayed over the fused ground coat and base lines. Oxides are added to the frit to give it the desired color and opacity, green being a conventional color for the writing surface. The mixture is sprayed uniformly over the ground coat and base lines, there being no need to modify the spraying operation because of the presence of the base lines which impart the depth dimension to the guidelines 11. The entire assembly is then fired for a third time at a temperature of, for example, 1340° F. This firing is at a slightly lower temperature than the temperature at which the guidelines were fired to prevent flowing of the guidelines. The low firing temperature also serves, with the added abrasive, to impart the desired matte finish and tooth to the writing surface. After firing the chalkboard presents the appearance indicated in FIGURES 1 and 2 and is ready for assembling in a frame and use.

From the foregoing description of a preferred form of the invention, it will be evident that the invention provides a chalkboard embodying guidelines that are readily discernible to one writing on the chalkboard because of the difference in level of the guidelines from the remainder of the writing surface. However, to a viewer a short distance away from the chalkboard, the guidelines are invisible or nearly so, inasmuch as they are distinguished from the remainder of the writing surface only by the difference in level between the remainder of the writing surface and the guidelines. The guidelines are not erasable and do not accumulate deposits of chalk in use. Also, because of the smallness of their depth dimension, the guidelines do not cause substantial interference with or discontinuity in chalk lines that cross the guidelines.

It will be evident to those skilled in the art that various changes and modifications can be made in the preferred form of the chalkboard and method disclosed herein without departing from the scope of the invention. The essential characteristics of the invention are set forth in the appended claims.

What is claimed is:

1. A chalkboard having, a continuous writing surface with raised guidelines thereon comprising a steel sheet having a porcelain enamel ground coat thereon, porcelain enamel base lines on said ground coat, and a porcelain enamel writing surface extending continuously over said ground coat and base lines so that the writing surface has raised guidelines corresponding to the base lines deposited on said ground coat, said guidelines being raised a distance above the remainder of the writing surface sufficient to enable them to be detected by the user of the chalkboard.

2. A method of making chalkboards which includes the steps of depositing porcelain enamel frit constituting a ground coat on a steel sheet, firing the sheet to fuse the frit and provide a ground coat, depositing porcelain enamel frit in lines on said ground coat, firing the sheet with said lines thereon to fuse the lines without reboiling the ground coat, depositing a coating of porcelain enamel frit on the ground coat and over the lines in substantially uniform thickness and again firing the sheet with the ground coat, lines and finish coat thereon to provide a writing surface having guidelines thereon that are detectable only because of the raised character thereof.

3. A method according to claim 2 wherein the base lines are applied to the ground coat by a silk screen process and consist of a paste comprising porcelain enamel frit and oil.

4. A method according to claim 2 wherein the ground coat, base lines and entire assembly are fired at successively lower temperatures.

5. A chalkboard having a writing surface with guidelines thereon comprising a base sheet, raised base lines on said base sheet, and a porcelain enamel writing surface extending continuously over said base sheet and base lines so that the writing surface has raised guidelines corresponding to the base lines on said base sheet.

6. The chalkboard of claim 5 wherein said base sheet comprises a steel sheet having a ground coat thereon.

7. The chalkboard of claim 6 wherein said ground coat is porcelain enamel.

8. The chalkboard of claim 5 whereon said raised base lines are porcelain enamel.

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EUGENE R. CAPUZIO, Primary Examiner

HARLAND S. SKOGQUIST, Assistant Examiner

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