Oct. 13, 1931. K. FRIEND 1,827,389

METAL BLACKBOARD SHEET

Filed May 22, 1931 2 Sheets-Sheet 1

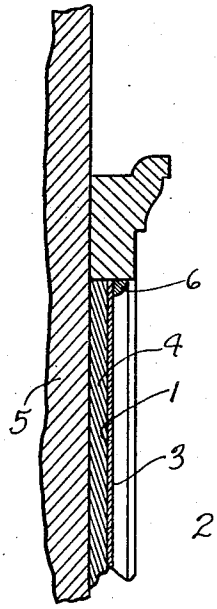


Fig. 1

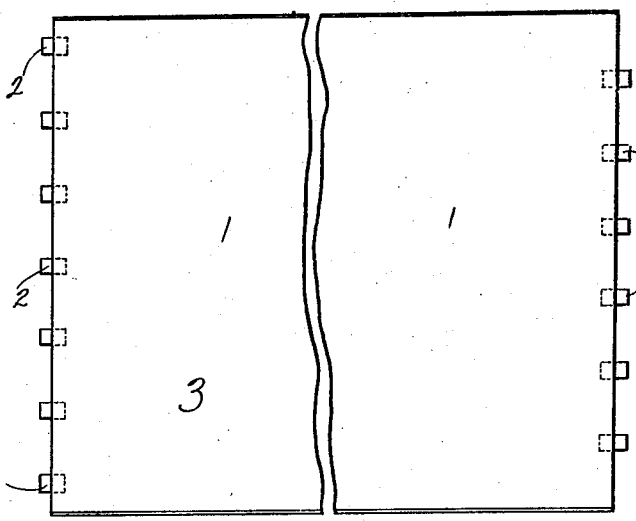


Fig. 2



Fig. 3

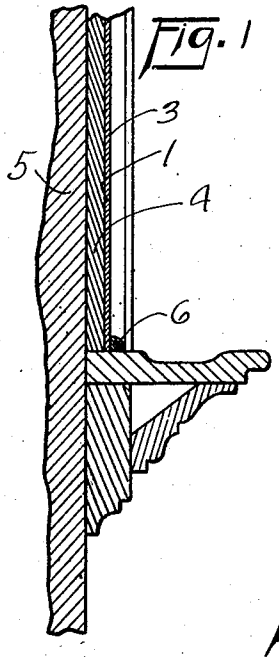


Fig. 4

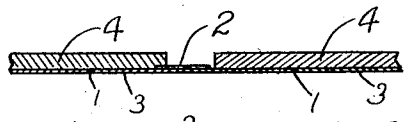
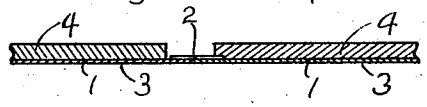


Fig. 5



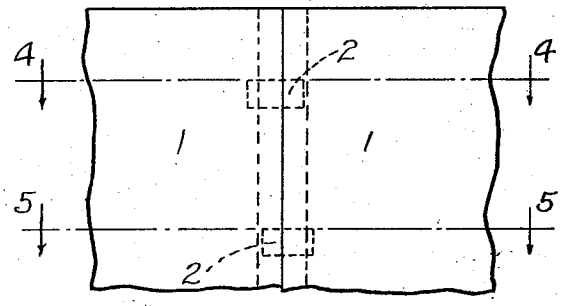


Fig. 6

Witness:

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Keith Friend

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ATTORNEYS

Oct. 13, 1931. K. FRIEND 1,827,389

METAL BLACKBOARD SHEET

Filed May 22, 1931 2 Sheets-Sheet 2



Fig. 8

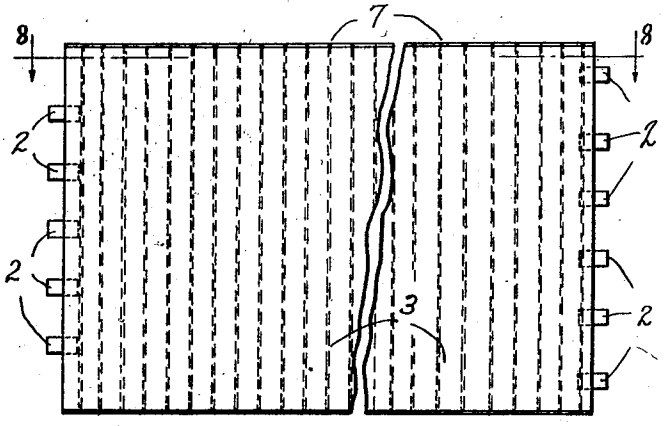


Fig. 7

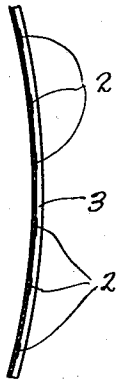


Fig. 9

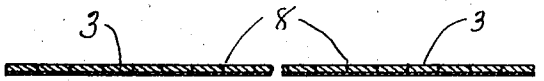


Fig. 11

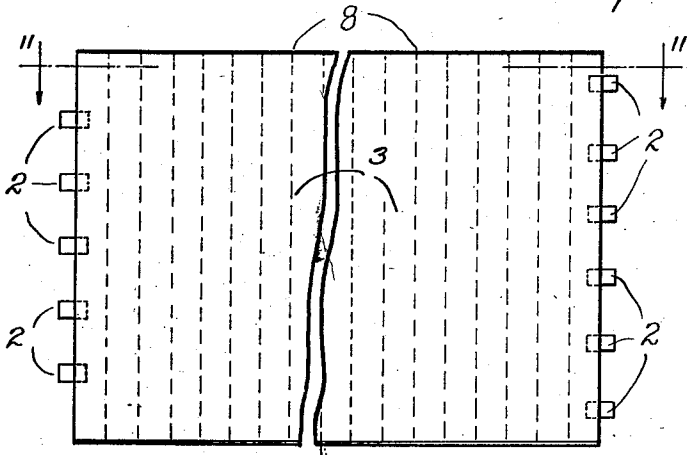


Fig. 10

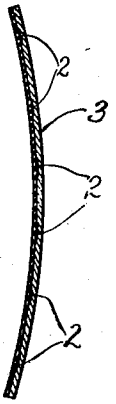


Fig. 12

Witness:
H. L. Chapel

INVENTOR.
Keith Friend
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Patented Oct. 13, 1931 1,827,389

UNITED STATES PATENT OFFICE

KEITH FRIEND, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR TO AMERICAN SEATING COMPANY, OF GRAND RAPIDS, MICHIGAN, A CORPORATION OF NEW JERSEY

METAL BLACKBOARD SHEET

Application filed May 22, 1931. Serial No. 539,280.

The present invention relates to metal sheet sections and more particularly to metal black board sheets and the method of making the same.

The main objects of the invention are to provide a novel metal black board sheet section; to provide novel methods of forming and making such sheets; to provide a metal black board so formed that it may be readily and permanently secured to a wall surface; and, to provide novel means and methods of making such black board sections in an economical manner.

Illustrative embodiments of the invention are shown in the accompanying drawings, wherein:

Figure 1 is a fragmentary cross-sectional view of the black board secured to a wall surface;

Figure 2 is a fragmentary top plan view of the metal black board sheet;

Figure 3 is an end elevational view thereof;

Figure 4 is a sectional view taken on line 4—4 of Figure 6;

Figure 5 is a sectional view taken on line 5—5 of Figure 6;

Figure 6 is an enlarged fragmentary top plan view of two sheets and the manner of interlocking them in flush relation;

Figure 7 is a fragmentary top plan view of a modified form of a black board sheet;

Figure 8 is a sectional view taken on line 8—8 of Figure 7;

Figure 9 is an enlarged fragmentary end elevational view thereof:

Figure 10 is a fragmentary top plan view of another modified form of a black board sheet;

Figure 11 is a sectional view taken on line 11—11 of Figure 10; and

Figure 12 is an enlarged fragmentary end elevational view thereof.

It is desirable that the metal sheet be formed with a cylindrical curvature in order that it may be rigidly and permanently secured or fastened to a wall surface as hereinafter described and several methods of forming the black board sheet in this manner are herein disclosed.

Referring to the drawings in which like numerals designate the same parts in the several views, the metal sheet 1 is preferably provided with a series of spaced tongues 2 secured on opposite ends thereof to the underside of the sheet in any suitable manner as by spot welding. The tongues on one side of the sheet are arranged in staggered relation with respect to the tongues on the opposite side thereof providing convenient means for securing adjacent sheets to the wall surface in end interlocked flush relation. The metal sheets are likewise preferably provided with a fused dull enamel coating 3 providing a black board writing surface for chalk.

In instances where no backing sheet is secured to the enameled metal sheet, it has been found that during the firing operation whereby the enamel is fused, the metal sheet becomes warped, buckled and uneven. To prevent this difficulty, it has been found that sheets held in cylindrical shape by means of forms during the firing operation do not thus buckle and warp when they are finished and the black board sheets when thus fixed to the wall are even and provide smooth writing surfaces.

In other instances, it is desirable to have backing sheets 4 for the metal black board sections. Installations having such backing sheets give a greater rigidity to finished black board sections and prevent metallic sounds and are otherwise more quiet in use. In instances where such backing sheets are used, the metal sheets are fired in the enamel fusing process in any suitable manner and buckling or twisting is overcome when the metal sections are secured to the backing sheets as hereinafter described.

These backing sheets are preferably made from some material or composition such as the commercially known product called masonite which is a composition pressed into sheet form from wood fibre exploded under high steam pressure. These backing sheets obviously retain a certain amount of hygroscopic water and it has been found that by plate drying the backing material in a veneer press to substantially free it of its moisture content and thereafter quickly adhesively se-

curing it to the enameled metal sheet as by casein glue under pressure, buckling is done away with and the assembly is caused to assume a curvature by the hygroscopic water or moisture absorption which the backing sheet picks up from the atmosphere.

This expansion however causes the assembly to assume a concavo-convex or compound curvature since the backing material expands in all directions. Finished black board sections of this character are therefore undesirable since the ends of the sheet sections cannot be made to properly interlockingly fit with adjacent sections when fixed to the wall 5 by means of the horizontally disposed upper and lower molding strips 6.

Since only the upper and lower horizontal edges of the black board sections are retained against the wall surface by means of the molding strips, it has been found desirable to form the black board section in the form of a cylindrical section. One method of thus forming the sections in the form of cylindrical sections is shown in Figures 7, 8 and 9 wherein a series of spaced parallel vertically disposed expansion directing elements, here shown as saw kerfs 7, are provided. These kerfs direct the expansion forces of the backing sheet as it absorbs its hygroscopic water or moisture and the black board section is thus caused to assume the form of a cylindrical section.

Another method of forming a black board section in the form of a cylindrical section is shown in Figures 10, 11 and 12 wherein the backing material is provided with a series of spaced vertically disposed expansion directing elements, here shown as separate elements 8.

It will thus be seen that a novel metal black board section is herein shown and described which may be readily and permanently secured to a wall surface in interlocking, flush relationship with its adjacent section and that several methods are herein disclosed for economically manufacturing such black board sections.

While but several specific embodiments of the black board sections and methods of making the same have been herein shown and described, it will be understood that each may be altered, varied or omitted without departing from the spirit of the invention as the same is defined in the following claims.

I claim:

1. In a structure of the character described, a metal sheet adhesively secured to a water retaining backing sheet when said latter sheet is substantially free of its water content whereby the structure is caused to assume a curvature by the hygroscopic water absorption of the backing sheet.

2. In a structure of the character described, a metal sheet adhesively secured to a water retaining backing sheet when said latter sheet is substantially free of its water content, said latter sheet having a series of spaced vertical expansion directing elements whereby the structure is caused to assume a cylindrical curvature as the backing sheet absorbs and retains hygroscopic water.

3. In a structure of the character described, a metal sheet adhesively secured to a water retaining backing sheet when said latter sheet is substantially free of its water content, said latter sheet having a series of spaced vertical expansion directing kerfs whereby the structure is caused to assume a cylindrical curvature as the backing sheet absorbs and retains hygroscopic water.

4. The method of making a product of the character described comprising adhesively securing a metal sheet to a water retaining backing sheet when said latter sheet is substantially free of its water content whereby the ultimate structure assumes a curvature by the hygroscopic water absorption of the latter sheet.

5. The method of making a product of the character described comprising adhesively securing a metal sheet to a water retaining backing sheet having a series of spaced vertical expansion directing elements when said latter sheet is substantially free of its water content whereby the ultimate structure assumes a cylindrical curvature by the hygroscopic water absorption of the latter sheet.

6. The method of making a product of the character described comprising adhesively securing a metal sheet to a water retaining backing sheet having a series of spaced vertical expansion directing kerfs when said latter sheet is substantially free of its water content whereby the ultimate structure assumes a cylindrical curvature by the hygroscopic water absorption of the latter sheet.

7. In a structure of the character described, a cylindrically curved metal sheet having a fused vitreous enamel surface, said sheet having a plurality of spaced laterally projecting tongues disposed on its opposite sides, the tongues on one side thereof being in staggered relation with respect to the tongues of the opposite side.

8. The method of making a cylindrical metal sheet section having a fused vitreous enamel surface comprising firing the sheet in the enameling process while the sheet is retaind in the cylindrically curved position.

In testimony whereof I have hereunto set my hand at Grand Rapids, Michigan, this 18th day of May, 1931.

KEITH FRIEND.