United States Patent [19]

Peraro

[11] **3,771,213**

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[54] **METHOD OF FORMING AN EMBOSSED FOIL-COVERED CEILING PANEL**

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[73] Assignee: **Armstrong Cork Company,** Lancaster, Pa.

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[52] **U.S. Cl.** **29/480,** 29/DIG. 42, 52/144, 52/599, 52/746, 156/219

[51] **Int. Cl.** **B23k 31/02**

[58] **Field of Search** ..... 52/144, 599, 746; 156/71, 219–220, 216, 295; 161/119–120, 147; 29/480, DIG. 42

[56] **References Cited**

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FOREIGN PATENTS OR APPLICATIONS

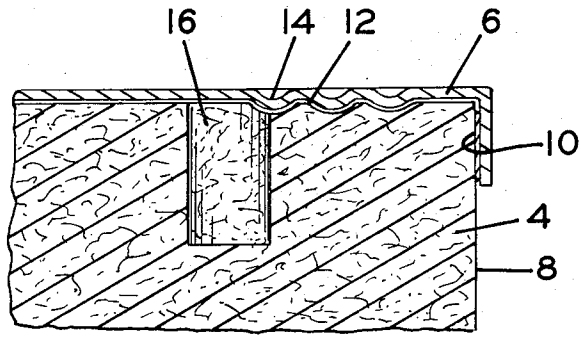
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[57] **ABSTRACT**

A conventional ceiling panel covered with a metal foil which is adhered to the edges of the panel. The foil is drawn tight across the face of the panel by lightly embossing the foil face to mechanically shrink the foil over the face of the panel.

1 Claim, 2 Drawing Figures



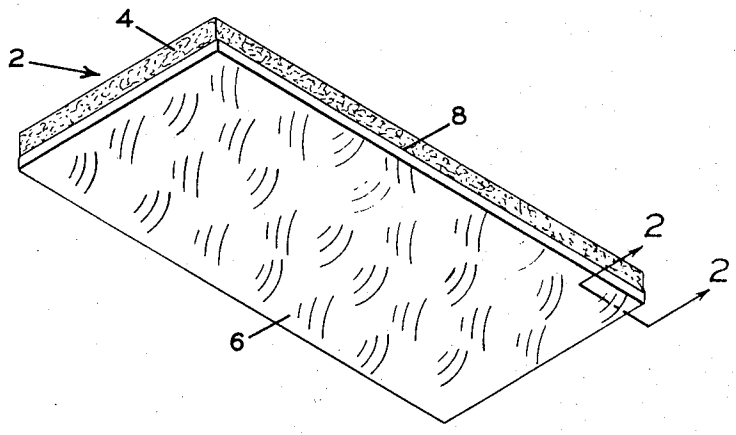


Fig. 1

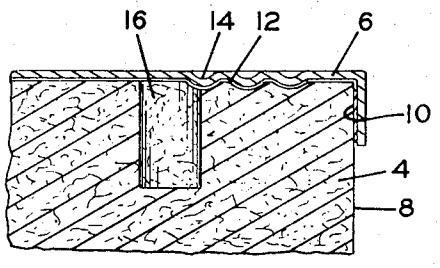


Fig. 2

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METHOD OF FORMING AN EMBOSSED FOIL-COVERED CEILING PANEL

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention relates generally to an improved acoustical panel and, more particularly, to an acoustical panel covered with a protective covering.

2. Description of the Prior Art

U. S. Pat. No. 2,802,764 discloses a ceiling panel which has been covered with a plastic film. The film is drawn tight across the face of the panel by being exposed to heat which causes the plastic to shrink and draw itself tight across the face of the panel. U. S. Pat. No. 1,837,451 and U. S. Pat. No. 3,074,505 both disclose techniques wherein a metallic sheet is placed over a ceiling panel. The metallic sheet is fastened to the panel by being punched and having the edges of the punched openings in the metal grasp the ceiling panel to hold the metal covering to the face of the ceiling panel. It is also possible with a rigid enough piece of material to merely place the metal on the face of the ceiling panel and have the edges of the metal crimped into the edges of the panel to hold the metal relative to the panel.

The invention herein is directed to a technique that will permit the manufacture of a metal-faced ceiling panel. The technique permits the use of an extremely thim metal, or foil, and thus provides a saving in material cost. The foil is shrunk to the ceiling panel by mechanical embossing which provides the technique by which the foil is placed tightly adjacent the ceiling panel and yields a decorative aesthetic effect.

SUMMARY OF THE INVENTION

The invention is directed to a ceiling panel formed of a basic conventional ceiling board to which there has been adhered a metal foil. The foil is secured, normally adhesively, to the edge of the panel and extends across the front face of the panel. The foil is drawn tight relative to the surface of the panel by being lightly mechanically embossed. This shrinks the foil and draws it tight and thereby provides a tight rigid metal surface extending across the front face of the ceiling panel. The foil is unpunched and the acoustical properties are obtained when the foil transmits sound to the prepunched board by vibration.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of a metal foil ceiling panel, and

FIG. 2 is a cross-sectional view, enlarged, showing the ceiling panel and embossed metal covering.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 1, the metal foil ceiling panel 2 is composed of a vegetable fiber or asbestos fiber ceiling panel 4 which is conventional in the art. Normally this type of panel would be provided with a white paint coating and used with the paint coating facing downward. The invention involves the placing of a metal foil 6 over the front face of the ceiling panel. A good material to use would be an aluminum foil of 0.0025inch thickness. The metal foil extends across the front face and is adhered at the edges 8 by glue or other appropriate adhering means. Consequently, the metal foil is adhered around its perimeter to the perimeter of the ceiling panel, and the foil extends across the front face of the ceiling panel. There will be a slight tendency of the metal foil to sag relative to the center portion of the front face. Any tendency to sag would be eliminated by shrinking or drawing the metal foil tight across the face of the ceiling panel. This shrinking of the foil is accomplished by a low relief embossing roll providing a mechanical embossing to the metal foil on the front face of the ceiling panel. The mechanical embossing does not penetrate through the metal foil, but only distorts the foil to draw it tight between the edges which are fastened to the edge of the ceiling panel.

Referring to FIG. 2, there is shown the foil 6 extending across a portion of the ceiling panel 4. The foil extends around the corner of the ceiling panel and is fastened to edge 8 by an adhesive 10. The foil 6, which extends across the face 12 of the panel 4, is not adhered to the face 12 by any mechanical means. A shallow embossed area 14 is shown. It can be readily seen that when the foil is embossed, a forming of the impressions in the foil will tend to absorb any excess material that may exist between two opposite edges of the ceiling panel. Furthermore, these impressions place the foil under a tension which extends longitudinally through the foil. This is in effect a shrinking of the foil over the surface of the board. It may be more properly called a tensioning of the foil so that it tends to lay in a plane parallel and adjacent the face of the ceiling panel and not sag in a dish-shaped plane and hang away from the front face of the ceiling panel when it is mounted in position in a ceiling. The ceiling panel may be provided with punched holes, such as hole 16, for acoustical purposes. Sound waves striking against the foil will cause the foil to vibrate and the sound will be transmitted to the punched board by the vibration and absorbed within the holes within the board.

There is now provided a very decorative ceiling panel which will have an embossed effect. The ceiling panel will be relatively easy to clean and maintain plus it has a metallic coating which will not be stained or affected by grease or dirt. The panel is capable of having some acoustical properties, and the front surface of the panel is relatively durable as compared to conventional fiber panels.

What is claimed is:

1. The method of manufacturing a metal foil ceiling panel comprising the steps of placing a metal foil across the face of a ceiling panel, adhering the metal foil to the ceiling panel only at the peripheral edge of the ceiling panel, embossing the portion of the metal foil which extends across the face of the ceiling panel to mechanically shrink the foil over the surface of the ceiling panel.

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