

[54] CEILING TILE

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52/144, 145, 222

[57] **ABSTRACT**

A substantially square frame made of wire is covered on one side or both sides with a skin of metal foil or thin metal sheet, preferably aluminum, or thin plastic film. The skin is secured on the frame by adhesive means, such as heat sealing. The surface of the skin may be treated by wrinkling, embossing, perforating, printing, coloring or other suitable decorating process. The thus obtained lightweight tile is usable for decorating ceilings, either suspended below or in conjunction with sound absorbing materials such as glass fiber or mineral wool.

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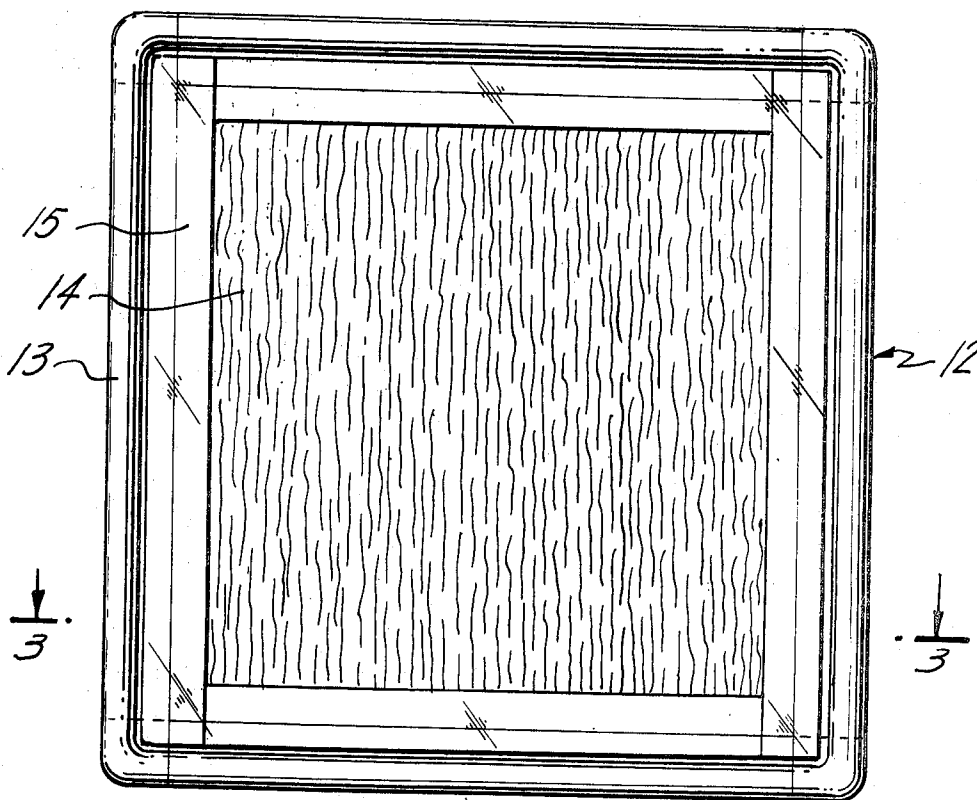
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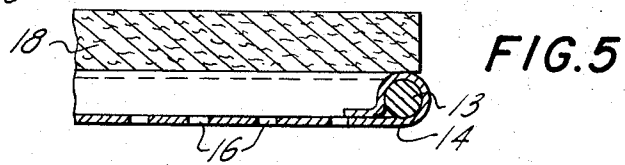
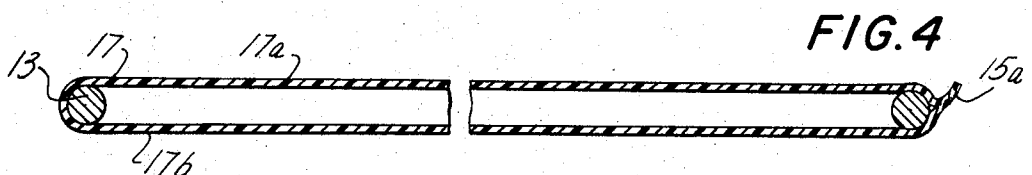
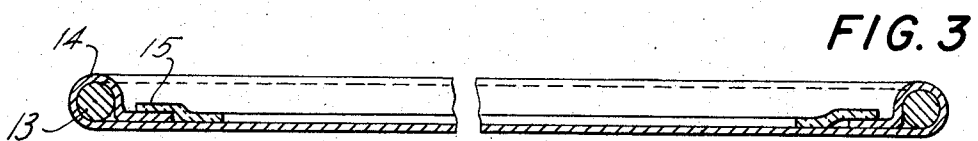
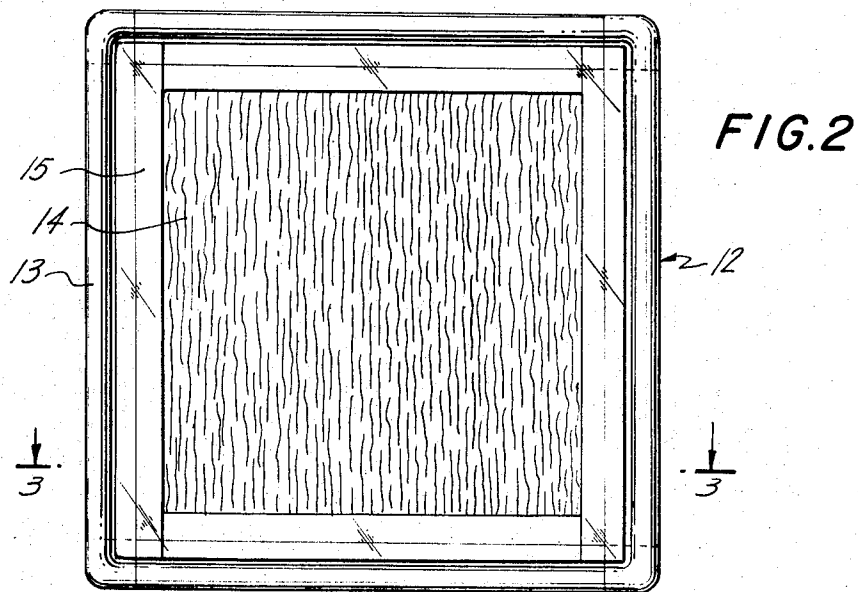
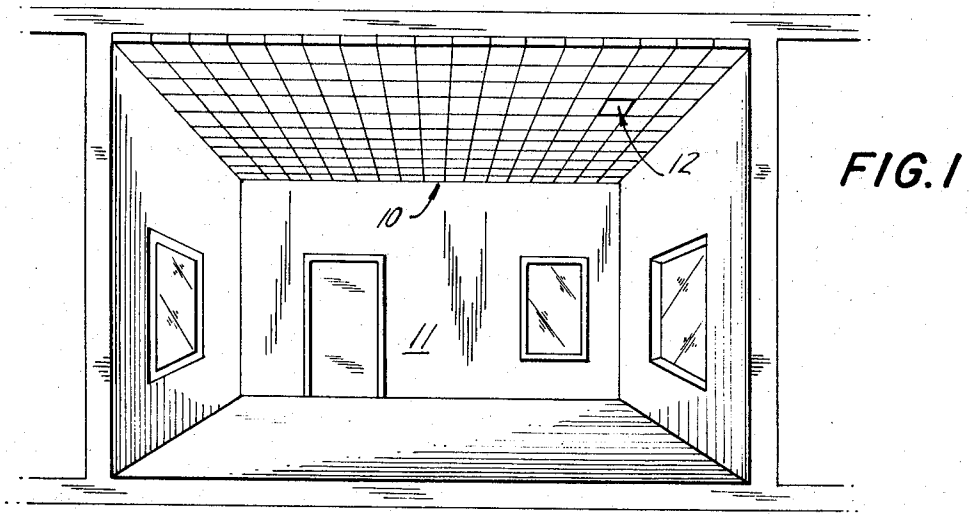
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**7 Claims, 5 Drawing Figures**





## CEILING TILE

## BACKGROUND OF THE INVENTION

The invention relates, generally, to material for ceilings and more particular to a thin, lightweight, decorative ceiling tile.

Ceiling tiles for various purposes are known in the art, such as sound absorbing, so-called acoustic tiles, and decorative tiles in square and rectangular shapes, usually made of relatively soft, fibrous material. Other ceiling material in the form of perforated or unperforated metal tiles or panels are known, for suspending so-called "hung" ceilings below the actual ceiling structure of a building, to reduce the height of a room. Tiles of the kind described usually consist of sheets of light materials with various smooth-surface finishes achieved by painting, anodizing or by enameling, which are also moisture and combustion resistant. However, certain specific qualities and properties of ceiling tiles in the known art are lacking, such as attractiveness, lightness of weight, economy of manufacture, ease of application and installation, and a minimum of bulk, and combining some of these properties to produce a ceiling tile having acoustical and light diffusing properties. It is intended by the present invention to overcome the aforementioned shortcomings.

## SUMMARY

The invention consists of such novel features, construction arrangements, combination of parts and improvements as may be shown and described in connection with the articles disclosed by way of examples only and as illustrative of preferred embodiments. The basic idea of the invention is to attain a thin, lightweight ceiling tile which is constructed by attaching a skin of metal foil or thin sheet metal, or of plastic film to a frame made of wire by suitable or convenient adhesive means. New and unexpected surface effects can be obtained by wrinkling the metal foil or by treating the plastic film by matting, coating, printing, dyeing, shading or tinting. It is obvious that the cover of the frames can be perforated for sound-reducing purposes. The tiles thus obtained can be installed in any known manner such as, for example, by an exposed grid T system.

Objects and advantages of the invention will be set forth in part hereafter and in part will be obvious herefrom or may be learned by practicing the invention, the same being realized and attained by means of the instrumentalities and combinations pointed out in the appended claims.

It is an object of the present invention to provide a thin lightweight ceiling tile which consists basically of a wire frame and of a substantially thin, pliable skin attached thereto.

It is a further object of the invention to provide a ceiling tile with a metal surface which can be wrinkled for decorative purposes.

Another object of the invention is to provide a ceiling tile with a plastic surface which can be transparent, translucent, opaque, or otherwise decoratively treated.

Yet another object of the invention is to provide a substantially thin ceiling tile comprising a skin of metal foil or thin lightweight metal sheet, which is perforated for acoustic purposes.

Yet a further object of the present invention is to provide a ceiling tile which is formed by a bag of suitable

material enclosed around a frame which would form an air blanket with acoustical properties.

Furthermore, it is an object of the invention to provide ceiling tiles which may be used alone or in conjunction with sound-absorbing materials such as glass fiber or mineral wool.

Various further and more specific purposes, features and advantages will clearly appear from the detailed description given below taken in connection with the accompanying drawing which forms part of this specification and illustrates merely by way of example embodiments of the article of the invention.

## BRIEF DESCRIPTION OF THE DRAWING

In the following description and in the claims, parts will be identified by specific names for convenience, but such names are intended to be as generic in their application to similar parts as the art will permit. Like reference characters denote like parts in the several figures of the drawing, in which

FIG. 1 is a perspective view of a room with a ceiling consisting of ceiling tiles according to the invention;

FIG. 2 is a plan view of a ceiling tile according to the invention;

FIG. 3 is a cross-section of the tile in FIG. 2 taken along the line 3—3 in FIG. 2, shown in an enlarged scale;

FIG. 4 is a cross-section of another embodiment of the tile shown in FIG. 2; and

FIG. 5 is a section, broken away, of another embodiment of the tile shown in FIG. 3.

## DESCRIPTION OF PREFERRED EMBODIMENT

Referring now in more detail to the drawing illustrating preferred embodiments by which the invention may be realized, there is a suspended tile ceiling 10 in a room 11, as shown in FIG. 1. A tile 12 of ceiling 10 is shown in FIG. 2. It consists of a frame 13, made of wire, over which a thin skin 14 is applied. The edges of skin 14 are wrapped around the wire of frame 13 and are secured by adhesive means, such as, for example, by heat sealing or by adhesive tape 15. It is understood that any suitable adhesive may be used. Skin 14 is preferably made of aluminum foil but a thin sheet of aluminum or other metal or a thin plastic film may be used. The surface of the skin 14, when it is metal, may remain smooth and bright, but lends itself to being textured, which gives an unusual decorative appearance. Skin 14 may be a thin plastic film for example, polyvinyl chloride, mylar or polyethylene, the surface of which can be subjected to every possible decorative treatment, such as tinting, rendering opaque, printing, coloring, matting, or the like.

Skin 14 may be perforated in a suitable pattern so that tile 12 may be used for acoustical purposes. When skin 14 is perforated, sound absorbing material, such as glass fiber batts or mineral wool 18 would be used behind tile 12, as shown in FIG. 5. The single layer skin 14 may be substituted by surrounding frame 13 with a bag 17 made from similar materials, closed at one end and having the other end secured at one end of frame 13 by heat sealing 15a or other suitable adhesive means. The resulting tile may then be subjected to heat shrinking to make bag 17 taut. This structure provides a tile 12 (FIG. 4) which has an air space between upper layer 17a and lower layer 17b, thus creating an air blanket with acoustical properties.

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The tiles made in accordance with the present invention may be installed in the conventional manner. They may be installed in an exposed grid T system, concealed grid system or any other suitable system.

While the invention has been described and illustrated with respect to certain preferred examples which give satisfactory results, it will be understood by those skilled in the art after understanding the principle of the invention, that various other changes and modifications may be made without department from the spirit of the invention.

What is claimed is:

1. A ceiling tile comprising a substantially rectangular wire frame and a skin, said skin having its edges extending beyond said frame when said frame is laid upon the top face of said skin, said edges being folded over

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said frame and attached to the top face of said skin by adhesive means, whereby said skin is secured over said frame.

2. A ceiling tile according to claim 1, wherein said skin comprises aluminum foil.

3. A ceiling tile according to claim 1, wherein said skin comprises a substantially thin sheet of lightweight metal. cm 4. A ceiling tile according to claim 2, wherein said aluminum foil is textured.

5. A ceiling tile according to claim 1, wherein said skin comprises plastic film.

6. A ceiling tile according to claim 5 wherein said adhesive means is a heat seal.

7. A ceiling tile according to claim 1, wherein said skin has perforations.

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