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[56]

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[54] FOAM PLASTIC PANEL WITHOUT TRUSS MEMBERS
5 Claims, 6 Drawing Figs.

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52/328, 52/341

[51] **Int. Cl.**..... E04c 2/22,
E04b 1/24

[50] **Field of Search**..... 52/340,
341, 309, 319, (Plastic Dig.), 602, 690—693,
327—333

ABSTRACT: A lightweight insulating panel is provided of large area suitable for building use which consists of a hard top and immediately there-below a lath or wire mesh with truss members fastened to the lath and rigid plastic foam surrounding the lath and the truss members.

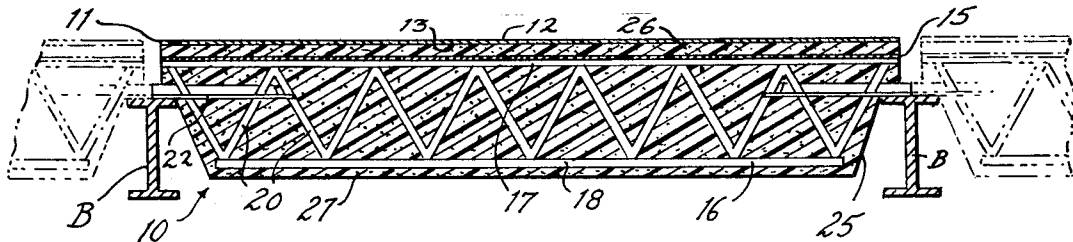


Fig. 1.

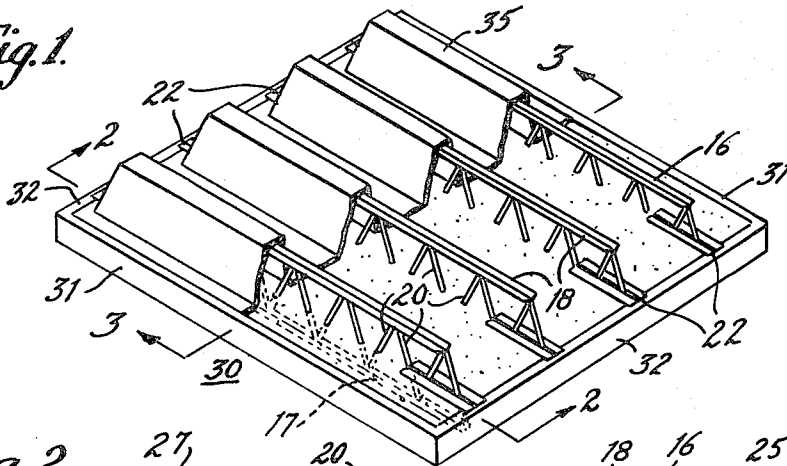


Fig. 2.

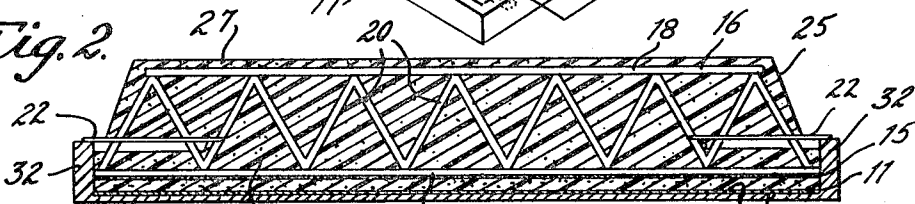


Fig. 3.

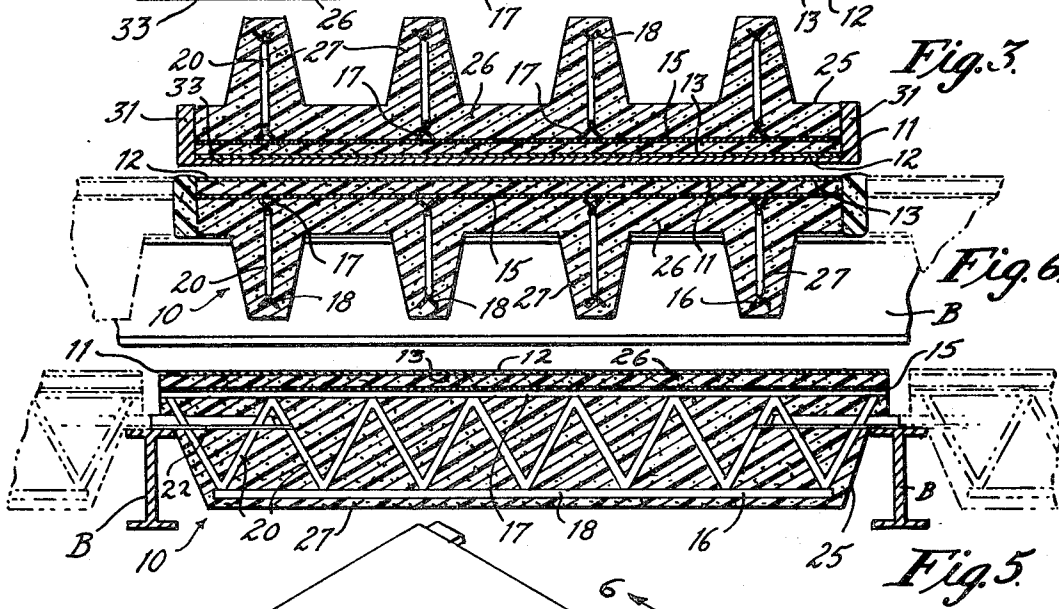


Fig. 6.

Fig. 5.

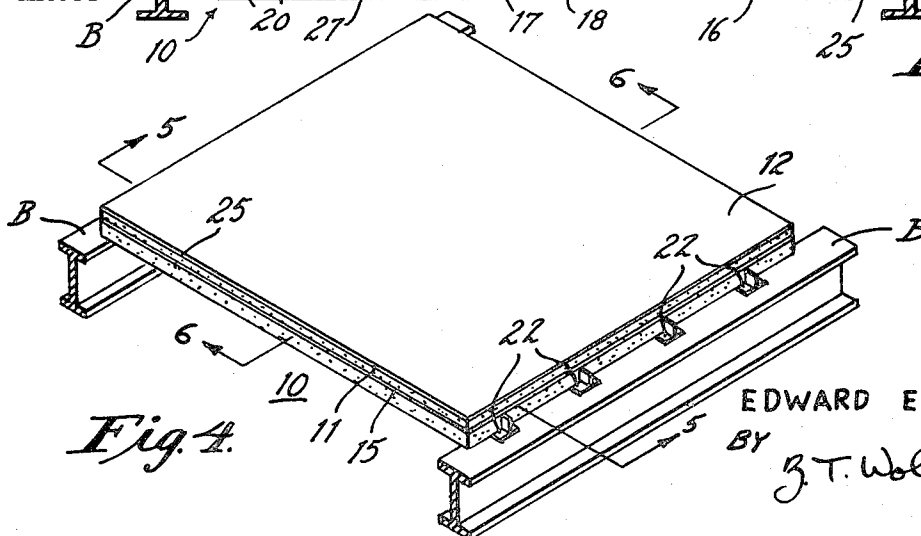


Fig. 4.

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FOAM PLASTIC PANEL WITHOUT TRUSS MEMBERS

BACKGROUND OF THE INVENTION

1. Field of the Invention

A lightweight insulating panel for use in building construction utilizing a metal lath or the like with attached truss members and having foam plastic surrounding the lath and truss members and with a smooth hard board providing an upper surface.

2. Description of the Prior Art

Various attempts have heretofore been made to provide lightweight prefabricated building panels. These panels must have a rigid structure, be capable of covering a large area, be inert and resistant to moisture and/or water, and be relatively easy to make. The panels previously available were heavy, required complicated forms for their construction and lacked any real cost saving over comparable panels.

SUMMARY OF THE INVENTION

In accordance with the invention a lightweight insulating building panel of large area is provided which may include a hard upper sheet with a layer of metal or other lath or wire mesh below it to which a plurality of steel trusses are attached, the trusses and lath being surrounded by rigid plastic foam.

The principal object of the present invention is to provide a panel of lightweight construction with heat and sound insulating qualities and covering a large area.

A further object of the present invention is to provide a panel that can be inexpensively and quickly produced.

A further object of the present invention is to provide a panel that is easily attached to metal supporting beams and is useful for both floors and roofs.

Other objects and advantageous features of the invention will be apparent from the description and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

The nature and characteristic features of the invention will be more readily understood from the following description taken in connection with the accompanying drawings forming part thereof, in which:

FIG. 1 is a view in perspective of a panel in accordance with the present invention during the making thereof with the panel turned upside down;

FIG. 2 is a vertical sectional view, enlarged of a panel in accordance with the invention, taken approximately on the line 2-2 of FIG. 1;

FIG. 3 is a vertical sectional view, enlarged, taken approximately on the line 3-3 of FIG. 1;

FIG. 4 is a view in perspective of a panel installed for use;

FIG. 5 is a vertical sectional view, enlarged, taken approximately on the line 5-5 of FIG. 4, parts being broken away to show the details of construction; and

FIG. 6 is a vertical sectional view, enlarged, taken approximately on the line 6-6 of FIG. 4.

It should, of course, be understood that the description and drawings herein are illustrative merely, and that various modifications and changes can be made in the structure disclosed without departing from the spirit of the invention.

Like numerals refer to like parts throughout the several views.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now more particularly to the drawings, the panel 10 as therein illustrated preferably includes an upper lamina 11, which preferably has a smooth exposed surface 12. The lamina 11 if used, may be of any desired relatively hard rigid material which is resistant to abrasion and to moisture and which provides an exposed protected panel face. The lamina 11, in a particular embodiment can be compressed wood fibrous material, available under the name "Masonite" of a thickness of one-eighth of an inch and with a roughened surface 13 opposite to the exposed surface 12.

A lamina 15 is provided of foraminous material such as high rib metal lath, or turkey wire of about 12½ gauge wire mesh, with spacing of 4 inches by 2 inches spaced from the surface 13 of the lamina 11 if the lamina 11 is used.

A plurality of spaced parallel trusses 16 are employed of any desired type. The trusses 16 are advantageously bar joists of suitable size and strength in accordance with the characteristics required for a specific type of installation. The trusses 16 shown have top and bottom bars 17 and 18 with diagonal connecting bars 20 welded thereto.

The top bars 17 are preferably of the same length as the laminas 11 and 15 while the bottom bars 18 may be shorter for clearance. The top bars are preferably secured at spaced locations therealong to the lamina 15 by wire fasteners, clips or be welding.

Intermediate the top and bottom bars 17 and 18 and preferably from about one-eighth to one-half of the height of the trusses 16 from the top, end bearing plates 22 are provided, secured to a plurality of diagonal bars 20.

A fill and covering 25 of stabilized plastic foam is provided which is applied so as fill in the interstices of the lamina 15, and extends in spaced relation therefrom between the trusses 16 about one-third of the height of the trusses as at 26, and above and below the lamina 15, and preferably so that the top bars and lamina 15 are about midway between the top and bottom of the covering 25. If the lamina 11 is used the foam is preferably adherent thereto.

Truss covers 27 of plastic foam integral with the remaining portions of the foam are also preferably provided which encase and extend along the trusses 16 and beneath the bottom bars 17.

While the plastic foam can be of any preferred material which is stable after application polyurethane foam is preferred.

The panel 10 can be fabricated in any desired manner. One suitable mode of making the panel consists in providing a lower mold 30 of rectangular shape and of a size corresponding to the desired size of panel 10. The lower mold 30 has sidewall portions 31, end wall portions 32 and a bottom wall 33 on which the lamina 11 is placed with its smooth surface 12 facing downwardly.

The trusses 16 have the bearing plates 22 secured thereto and the lamina 15 and trusses 16 are assembled and secured together and the lamina 15 is placed in position, supported by the bearing plates 22 resting on the end wall portions 32 of the mold 30, with the lamina 15 spaced from the lamina 11 if the lamina 11 is used.

The material to provide the foam is then supplied into the molds after an upper and covering mold 35 has been placed in position, covering the projecting portions of the trusses 16.

The application and curing of the foam fill and covering 25 is then completed so that the foam is in engagement with the lamina 15 and at least part of the trusses 16, the foaming action being utilized if desired to provide the truss covers 27.

Upon completion of the foam formation, the upper mold 35 is removed and the completed panel 10 is removed from the mold and oriented when desired for use.

The panel 10, in use, can be supported by the bearing plates 22 engaged on beams B and the edges of contiguous panels 10 sealed, preferably by solidifiable plastic foam to provide a leakproof structure.

The panel 10 constructed as herein described is strong, has excellent heat insulating and sound insulating properties and is particularly suited for use as a ceiling panel and as roof panel with roof coatings and coverings applied to the exposed face thereof.

I claim:

1. A panel for use in building construction comprising a rigid face lamina of sheet material having an interior surface,
- a foraminous lamina in closely spaced and parallel relation to said interior surface of said face lamina and having a side face oppositely disposed with respect to said interior surface,

a plurality of truss members secured to and extending from said side face of said foraminous lamina, and
a unitary covering member of stabilized plastic foam engaged with said interior surface of said rigid face lamina and with said foraminous lamina and extending from said foraminous lamina in at least partial covering relation to said truss members.

2. A panel as defined in claim 1 in which said covering member extends in enclosing relation to said

truss members.

3. A panel as defined in claim 1 in which said foraminous lamina is of metal lath.

4. A panel as defined in claim 1 in which said foraminous lamina is of wire mesh.

5. A panel as defined in claim 1 in which said truss members are bar joist members.

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