United States Patent [19]

Waite

[11] **3,879,910**

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[54] **TEMPERATURE AND SOUND INSULATED PANEL**

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[73] Assignee: **Transco Inc.**, Chicago, Ill.

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[21] Appl. No.: **286,897**

[52] **U.S. Cl.** **52/145;** 52/622; 52/410

[51] **Int. Cl.** **E04b 1/74;** E04c 2/00

[58] **Field of Search** 52/410, 408, 618–622, 52/249, 268, 347, 353, 383, 407, 612, 145; 181/336

[56] **References Cited**

UNITED STATES PATENTS

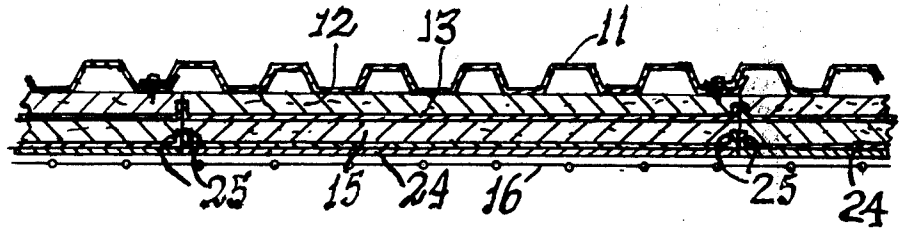
1,336,683	4/1920	Davies et al.	52/622
2,284,229	5/1942	Palmer	52/622
2,382,474	8/1945	Gambo	52/410
2,744,589	5/1956	Jenkins et al.	52/618
3,319,738	5/1967	Wehe	181/33 G
3,336,709	8/1967	Berney et al.	52/407
3,377,760	4/1968	Waite	52/410
3,540,171	11/1970	Kumnick et al.	52/618

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[57] **ABSTRACT**

A prefabricated panel member for construction of a wall and the like, consisting of an exterior metallic corrugated panel section, a first inner fibrous insulating batt, a noise-reducing element in sheet form in facial abutment with one face of the first insulating batt, a second fibrous insulating batt to the opposite side of the noise-reducing element, a heat-reflective moisture-restraining foil covering the exposed face of the second insulating batt, and a supporting base of wire mesh to the opposite side of the panel; the panel member also providing connectors for readily assembling all of the components of the panel into a compact prefabricated unit.

3 Claims, 7 Drawing Figures



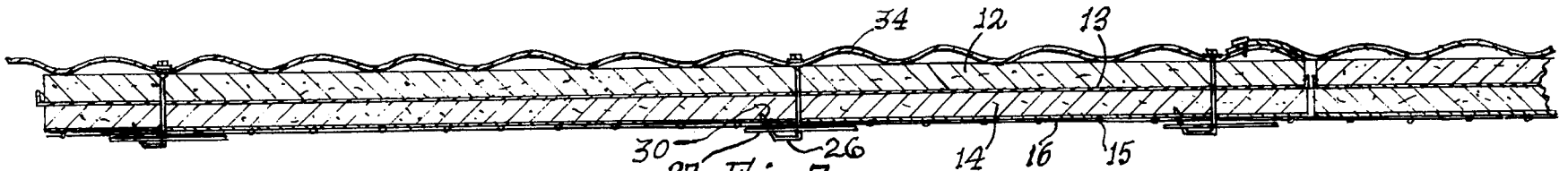


Fig. 7.

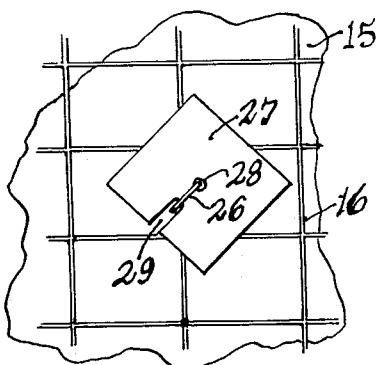


Fig. 5.

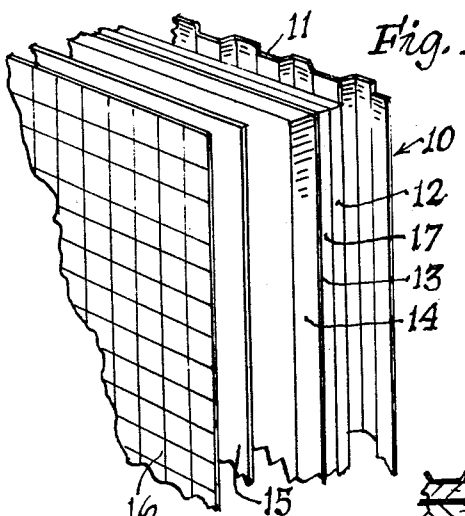


Fig. 1.

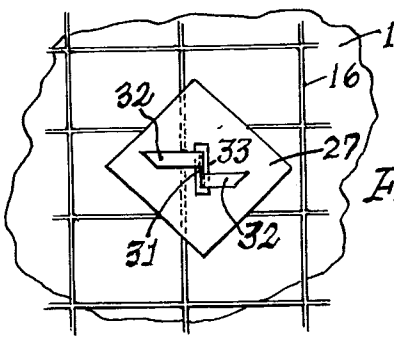


Fig. 6.

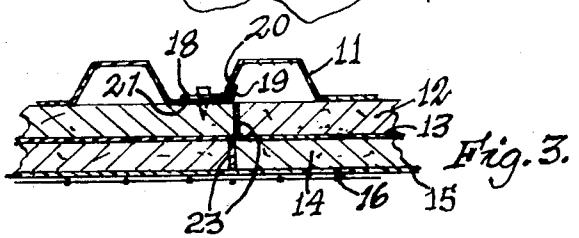


Fig. 3.

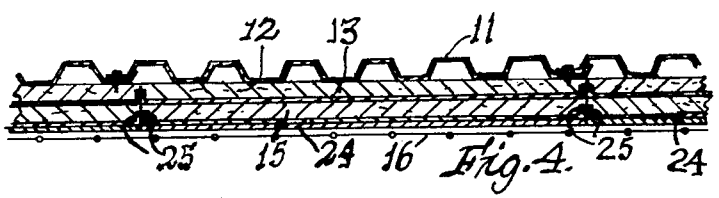


Fig. 4.

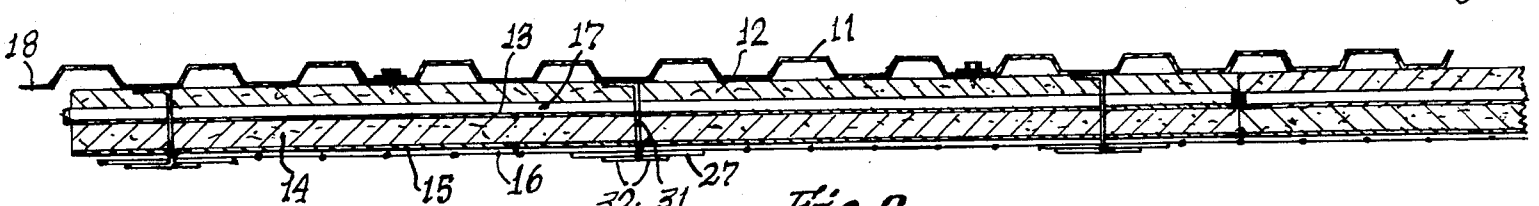


Fig. 2.

TEMPERATURE AND SOUND INSULATED PANEL

SUMMARY OF THE INVENTION

A prefabricated panel member which is both insulating and noise-reducing, which may be readily assembled in desired sizes for adaptation in constructing a wall and the like. The panel consists of an exposed metallic weight-supporting member preferably corrugated for adding thereto rigidity and strength, to which is readily attached in sequential layers an insulating batt, a noise-reducing element, a second insulating batt covering the noise-reducing element, a heat-reflective foil member, and a base wire mesh. All of the components are adapted to be impinged upon connectors carried by the inner face of the corrugated exterior panel member, with each connector including a fastening plate cooperating to secure the components into a prefabricated panel member of any desired size or shape.

The invention will be best understood by reference to the accompanying drawings showing the preferred form of construction, and in which:

FIG. 1 is a fragmentary perspective view of the preferred panel showing the components thereof in exploded relation one to the other;

FIG. 2 is a detailed sectional view taken through a prefabricated panel;

FIG. 3 is a fragmentary detailed sectional view showing the preferred form of abutment and connection between certain components of the prefabricated panel;

FIG. 4 is a fragmentary detailed sectional view showing a modified panel section;

FIGS. 5 and 6 are fragmentary plan views of different forms of connectors utilized with this invention; and

FIG. 7 is a fragmentary detailed sectional view of a modified form of the panel.

This invention relates to a self-supporting wall panel and includes a plurality of structural components.

The wall panel **10** normally comprises a metallic exterior facing **11** which is preferably corrugated for added rigidity and strength. To the inner side of the corrugated facing **11** is placed a batt of insulating material **12.** This insulating material may be in the form of fiber glass or the like, and, as such, is slightly compressed and bonded together by a suitable resin or the like.

On the exposed surface of the batt **12** is placed a sound-absorbing element **13** which may be a lead sheet of a thickness such that its weight would approximate one pound per square foot. Disposed upon the sound-absorbing element **13** is a second batt of insulating material **14.** Covering the outer exposed face of the second bat of insulating material **14** is a heat-reflective foil, such as aluminum foil, **15.**

Forming a base for the wall panel **10** is a wire mesh **16** which is preferably of a No. 16 gauge galvanized material. As shown in FIG. **2,** the sound-absorbing element **13** has its peripheral edges bent at right angles to form retaining flanges **17** which embrace the corresponding peripheral edges of the first insulating batt **12.** When the panels are assembled into a complete unit, it is desirable to have these retaining flanges **17** mating with like flanges of adjacent panels to assure their functioning as a noise-deadening or noise-reducing member.

It should also be noted that the corrugated facing **11** provides a free-standing end edge **18** extending laterally from the panel **10.** The opposite parallel end edge of the corrugated facing **11** provides an outwardly extending shoulder **19** which is of a length less than the full depth of the corrugation as shown in FIG. **3.** As shown, the shoulder **19** of one panel will embrace a portion of the corrugated wall **20** of the adjacent panel, while the free-standing end **18** will lie in facial abutment with a like disposed surface **21** of the first corrugation of the adjacent panel. These portions are then adapted to be connected together by a suitable sheet metal screw or the like. As shown in FIG. **3,** it may be desirable to provide oppositely extending flanges **23** on the adjacent noise-reducing elements **13** so that they perform the additional function of retaining the fibrous insulated batt in their desired configuration.

The sectional view shown in FIG. **4** is comparable to that shown and described in FIGS. **2** and **3,** with the addition thereto of a second sound-absorbing element or lead sheet **24,** which is disposed beneath the retaining mesh **16.** The ends of the second lead sheet **24** are formed to provide peripheral flanges **25** embracing the peripheral edges of the adjacent second sound-absorbing sheet **24.**

To assemble the panel as a prefabricated unit, the corrugated facing **11** is provided with a plurality of rearwardly extending connector pins **26** which have their base portions, by means of welding or the like, fixedly connected to the inner crest of the corrugation, as shown. The components of the panel may be readily impinged upon the connector pins **26** into a unitary structure, as shown in FIGS. **5** and **7.**

As the free end of the connector pins **26** pass through the wire mesh, it is desirable to provide a fastener plate **27** over the exposed pin **26** to aid in retaining the same in its relation to the components of the panel. This fastener plate **27** is generally of a substantially rectangular shape and is provided with a center aperture **28** through which the connector pin **26** projects. One side edge of the fastener plate **27** is provided with a slot **29** through which the free end of the connector pin **26** is bent so as not only to connect the plate **27** to the exterior of the panel **10,** but also to prevent the sharpened end **30** of the pin **26** from protruding from the face of the batt in an undesired condition.

In FIG. **6** there is shown a modified connector pin **31** which has its free penetrating end bifurcated so as to provide a pair of tabs **32,** so that when the pin is journalled through the center aperture **33** of its associated fastener plate **27,** the bifurcated tabs **32** may be bent in opposite directions into facial abutment with the fastener plate **27** to secure the same thereto.

FIG. **7** illustrates a modified sectional view of the invention in which the facing member **34** is formed with wavelike corrugations rather than with the rib formations shown in FIGS. **1** through **4.**

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A temperature and sound-insulated panel for wall constructions and the like consisting of a plurality of superimposed members comprising

a. a metallic corrugated facing,

b. a first fibrous heat-insulating batt to one side of said corrugated facing,

c. a sound-absorbing lead sheet of a size greater than said insulating batt so as to cover one face of said insulating batt and provide portions bendable upon and covering the peripheral edges of said batt,

d. a second insulating batt of a size equal to said first insulating batt and positioned upon and covering the sound-absorbing lead sheet,

e. a solid backing of heat-reflective moisture-restraining foil covering the exposed side of said second insulating batt,

f. a wire mesh retainer positioned upon the exposed face of said solid backing so as to form a base for the plurality of superimposed members,

g. and a plurality of connectors carried by said corrugated facing and extending perpendicular therefrom and penetrating said superimposed members for securing the same together in a prefabricated panel.

2. A temperature and sound insulated panel as defined by claim **1**, wherein said exterior metallic lead-bearing corrugated facing is of a size greater than said remaining superimposed members so as to provide end edge portions adapted to be superimposed upon the juxtaposed panels to form a continuous self-supporting insulated wall.

3. A temperature and sound insulated panel as defined by claim **1** and including a plurality of sound-absorbing sheets disposed upon opposite surfaces of said insulating batts between said corrugated facing and said wire mesh retainer for securing the same into a prefabricated panel.

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