Aug. 17, 1948. R. C. PARKES 2,447,272

INSULATED PANEL

Filed Aug. 9, 1945 2 Sheets-Sheet 1

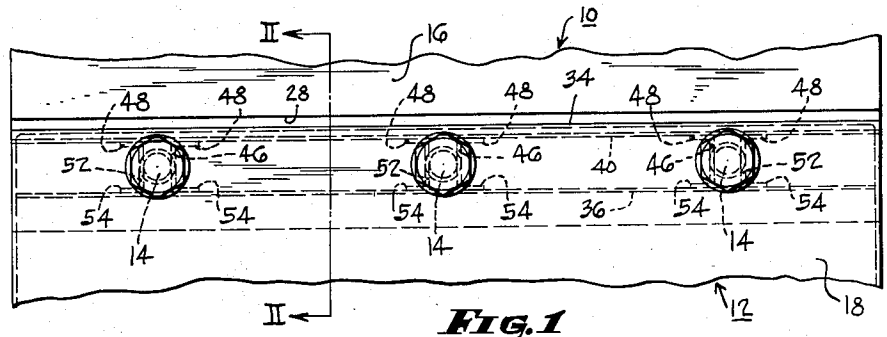


FIG. 1

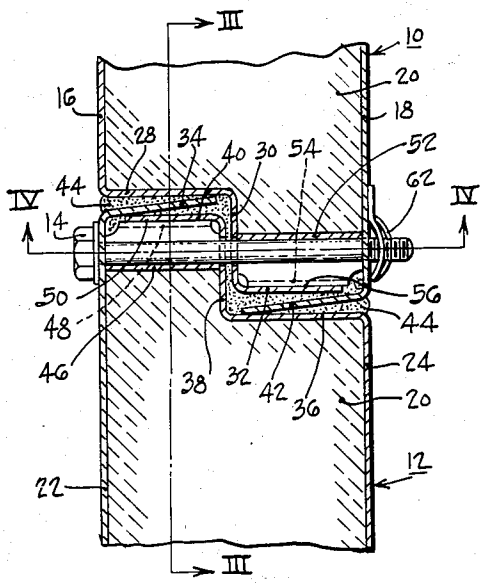


FIG. 2

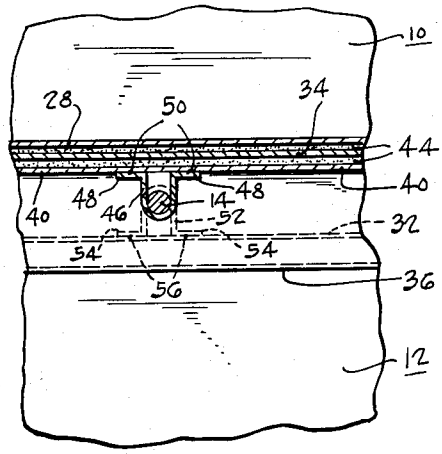


FIG. 3

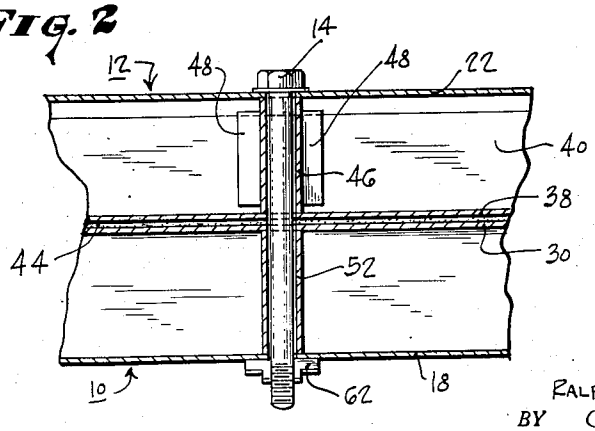


FIG. 4

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INSULATED PANEL

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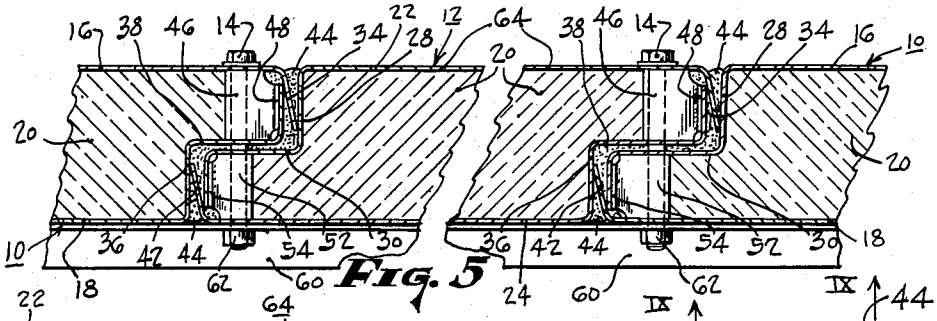


FIG. 5

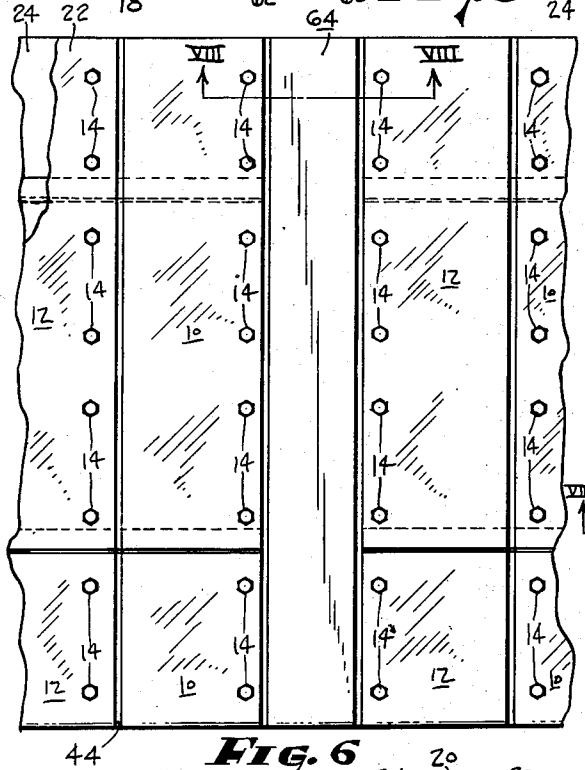


FIG. 6

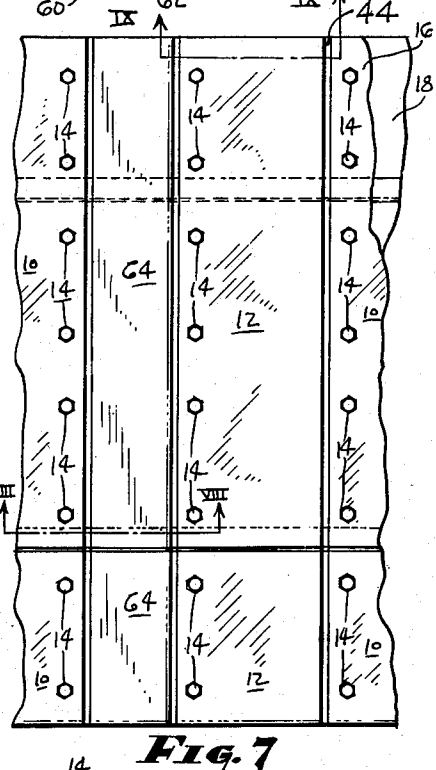


FIG. 7

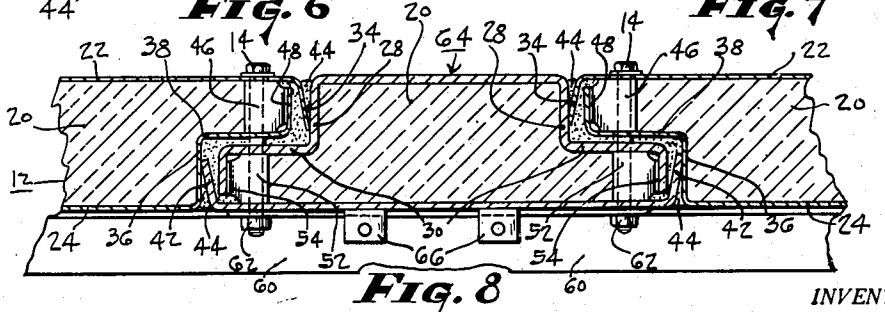


FIG. 8

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UNITED STATES PATENT OFFICE

2,447,272

INSULATED PANEL

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Application August 9, 1945, Serial No. 609,785

2 Claims. (Cl. 189—34)

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My invention relates to an insulating panel of the type adapted to be used in constructing walls of buildings, walls of drying chambers or other enclosures.

One object is to produce an improved insulating panel construction.

A further object is to produce an improved insulating panel in which metal-to-metal contact between the opposite sides of the panel is reduced to a minimum, thereby correspondingly decreasing the transmission of heat from the interior to the exterior of an enclosure formed by such panels.

A still further object is to produce an improved insulating panel construction which can be built of very light gauge sheet metal but which will nevertheless produce a sufficiently rugged construction.

A still further object is to devise an improved panel construction by means of which interchangeable panel sections can be produced by mass production methods.

A still further object is to produce an improved panel construction which lends itself to the building of walls or partitions of any desired size and which is so designed that any desired panel section can be readily removed and replaced without disturbing the remaining wall or partition structure.

In building an insulated wall or partition, such, for example, as the wall of a drying chamber, it may be desirable or necessary to mount heavy objects, such as a blower or a heating coil on one or more of the walls of such chamber.

It is, therefore, a further object of my invention to produce an improved insulated wall structure which includes panel sections made of heavier gauge sheet metal, or formed of rigid relatively thick plate, so as to have the required strength or stiffness, but which may be assembled in the same manner as light-gauge panel sections, and which, when assembled, present the same appearance as the light-gauge panel sections.

These and other objects are effected by my invention as will be apparent from the following description and claims taken in connection with the accompanying drawings forming a part of this application, in which:

Fig. 1 is a fragmentary side elevational view of two adjacent panel sections secured together;

Fig. 2 is a section on line 2—2 of Fig. 1;

Fig. 3 is a section on line 3—3 of Fig. 2;

Fig. 4 is a section on line 4—4 of Fig. 2;

Fig. 5 is a sectional view showing three panel

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sections secured together and to a supporting frame;

Fig. 6 is a fragmentary side elevation of a wall built of light and heavy gauge panel sections, certain parts being omitted and certain parts being broken away;

Fig. 7 is a view similar to Fig. 6, showing a slightly modified structure;

Fig. 8 is a section on line 8—8 of Fig. 6 or Fig. 7.

Referring to Fig. 1 of the drawings, there is shown two panels 10 and 12 which are adapted to be secured together to form a wall. As will be seen from Figs. 2 and 5, the juxtaposed marginal portions of adjacent panels are provided with reduced overlapping portions through which fastening bolts 14 extend.

As will be seen from Fig. 2, the panel 10 is formed of two spaced sheets 16 and 18 between which is placed insulating material, such as cork 20. The panel 12 is likewise formed of similar sheets 22 and 24, which are also separated by insulating material 20. For the purpose of this application, the sheets 16 and 22 will be referred to as constituting the outer sides of the panels, that is, the sides exposed to ambient temperature, while the sheets 18 and 24 will be referred to as being on the inner sides of the panels or the sides thereof exposed to heat.

In order to produce the reduced, overlapping portions of the adjacent panels, a marginal portion, along one side of the outer sheet 16 of the panel 10, is bent toward the inner sheet 18, then parallel to said inner sheet, and finally again toward said inner sheet, so as to produce offset wall portions 28, 30 and 32. The marginal portion of the adjacent side of the outer sheet 22 of the panel 12 is bent toward its inner sheet 24 to form a wall portion 34. The adjacent marginal portion of the inner sheet 24 of the panel 12 is bent in the same manner as the marginal portion of the sheet 16, but in the opposite direction, so as to produce the wall portions 36, 38 and 40. The adjacent end of the inner sheet 18 of the panel 10 is bent towards its outer sheet to form the wall portion 42 corresponding to the wall portion 34. It will be noted that the wall portions 28, 30 and 32 are spaced from and parallel to the wall portions 36, 38 and 40 and that the wall portions 34 and 42 incline slightly towards, and may or may not touch, the adjacent wall portions 28 and 36, respectively. The spaces between the various wall portions referred to are filled with heat insulating material 44. It will be understood that registering apertures are provided in the inner and

outer sheets 18 and 22 and in the wall portions 30 and 38 for the passage of the bolts 14.

In order to give the joint between the adjacent panels added strength, a sleeve 46 has its flanges 48 welded, at 50, to the wall portion 40, and a similar sleeve 52 has its flanges 54 welded to the wall portion 32, as at 56. As will be seen from the drawings, the bolts 14 pass through the rounded portions of the sleeves and that the heads of the bolts, when tightened, bear against the adjacent ends of the sleeves. In this way, the overlapping portions of the panels are secured firmly together and the stresses tending to separate the panels or stretch the metal are resisted along the entire areas of the sleeves which engage the bolts and not only by the walls of the apertures in the wall 30 and 38 through which the bolts pass. By this construction, I am enabled to build my improved panels from thin sheet metal, such as 24 gauge, and I have found that panel sections made eight or more feet long and a foot or more wide, and fastened together as shown, can withstand concentrated weight of 400 to 600 pounds with no perceptible buckling or deformation.

In Fig. 5, I have shown the manner in which any number of panels can be secured together to form a wall of the desired length and width. Also, in Fig. 5 I have shown the panels secured to a framework, as, for example, angle members 60, which are preferably disposed on the inner sides of the panels and which are provided with apertures through which the inner ends of the bolts project to be engaged by any suitable retaining means 62.

When it is desired to provide localized added strength or reinforcement, as, for example, when it is desired to mount a blower or a steam coil on the wall of a drying chamber, a special panel 64, which may be of cast metal or of a heavier gauge sheet metal, is interposed between any pair of light-gauge panels 10 and 12. The panel 64 may be made in one piece, as shown in Fig. 6, or it may be made of sections having the same dimensions as the other panels, as in Fig. 7.

The panel 64 has its marginal portions bent in the same manner as the other panels, as clearly shown in Fig. 8, and is secured to the adjacent portions of the other panels in the manner above described. Since, except for being narrower and made of thicker material for added strength, the panel 64 is otherwise identical, its parts have been referred to by the same reference numerals used for designating the parts of the other panels. When a panel 64 is used, brackets 66 or the like are suitably secured thereto for supporting a blower, a steam coil or other heavy object, not shown.

The ends of the panels are closed by means of end pieces which are shaped to conform to the shape of the panels in cross section, and which are secured to the ends of the panels.

From the structure described, it will be seen that I have produced an insulating panel which is very rugged even when made of relatively light-gauge metal; which can be produced inexpensively by mass production; which can be assembled with little skill and effort; and which can be made in any desired sizes and used to build walls or partitions of any desired size. It will also be seen that the light-gauge panels can have inserted between them other panel sections of a rigid structure without changing the appearance or otherwise affecting the wall structure. A further feature of the structure is that, while the panels overlap, it is possible to remove one or more panels, as when it is desired to provide a door or window not previously contemplated.

Special attention is directed to the reduction of metal-to-metal contact so as to reduce conductive heat losses, and to the sprung wall portions 34 and 42 which tend to follow the adjacent wall portions 28 and 36, respectively, so as to compensate for any slight separation of the panels. Attention is also directed to the structure and disposition of the sleeves 46 and 52 and the part they play in augmenting the capacity of the bolts to resist forces tending to separate the panels, in reinforcing the overlapping wall portions of the panels through which the bolts extend, and in resisting pressure exerted axially of the bolts, when the same are tightened, to prevent deflection of the opposite marginal portions of the inner sheet 18 and the outer sheet 22 of the panels 10 and 12, respectively. It will also be seen that, in addition to engaging the marginal portions of the inner sheet 18 and the outer sheet 22 of the panels 10 and 12, the bolts also engage the intermediate wall portions 30 and 38 of the outer sheet 16 and inner sheet 24 of the panels so that, if one of the panels is subjected to a force tending to pull it away from the other panel in a direction substantially normal to the axes of the bolts, both panels will tend to move as a unit in the direction of the force.

The material 44 with which the spaces between the walls of the panels are filled may be waterproof so as to produce a weatherproof construction.

Since the inner and outer sheets are separated by cork or the like, and since the material 44 is also inherently sound-deadening, the panel structure described is useful for building soundproof enclosures. This is due to the fact that only the bolts extend from one side to the other of the panel, and, since the bolts are rigid and hence possess little resonance, sound transmission is greatly reduced. Also, the reduced metal-to-metal contact reduces heat transmission from the inner to the outer side of the panel.

The manner in which the inner and outer sheets of the panels and in which adjacent panels are secured together produces the great strength of the panels which permits me to use very light sheet metal. This is due to the fact that when a panel or any portion thereof is subjected to a heavy weight or pressure, the strain is transmitted through the bolts 14 and the sleeves 46 and 52, in all directions, to both sheets of the panel and to adjacent portions of the opposite sheets of adjacent panels.

What I claim is:

1. An insulating panel comprising a first sheet and a second sheet arranged in spaced and substantially parallel relation to each other, a marginal portion along a side of said first sheet being bent to form a first wall extending in the direction of said second sheet, said marginal portion being further bent to produce a second wall extending substantially parallel to said sheets, said marginal portion being still further bent to produce a third wall extending toward said second sheet, whereby a marginal panel portion of reduced thickness is produced, the marginal portion of the adjacent side of said second sheet being bent to form a fourth wall extending toward said second wall, a sleeve positioned between said second wall and the juxtaposed portion of said second sheet and having at least one side flange

which contacts said third wall, and means for securing said side flange to said third wall, there being apertures in said second wall and said second sheet registering with said sleeve for the passage of fastening means through said second wall, said sleeve and said second sheet.

2. A panel assembly comprising at least two panels each embodying the structure defined in claim 1, said panels being assembled in side to side relation with their marginal portions of reduced thickness in overlapping relation and with the sleeves in said panels in registration, and a bolt passing through the second sheets, the second walls and the sleeves of said panels to secure the same together.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
874,939	Clayton et al.	Dec. 31, 1907
1,017,067	White	Feb. 13, 1912
1,340,949	Goodrich	May 25, 1920

FOREIGN PATENTS

Number	Country	Date
9,180	Great Britain	1914