Oct. 27, 1970 E. L. KARN 3,535,842

FIRE-RESISTANT REMOVABLE WALL PANEL

Filed March 12, 1969 2 Sheets-Sheet 1

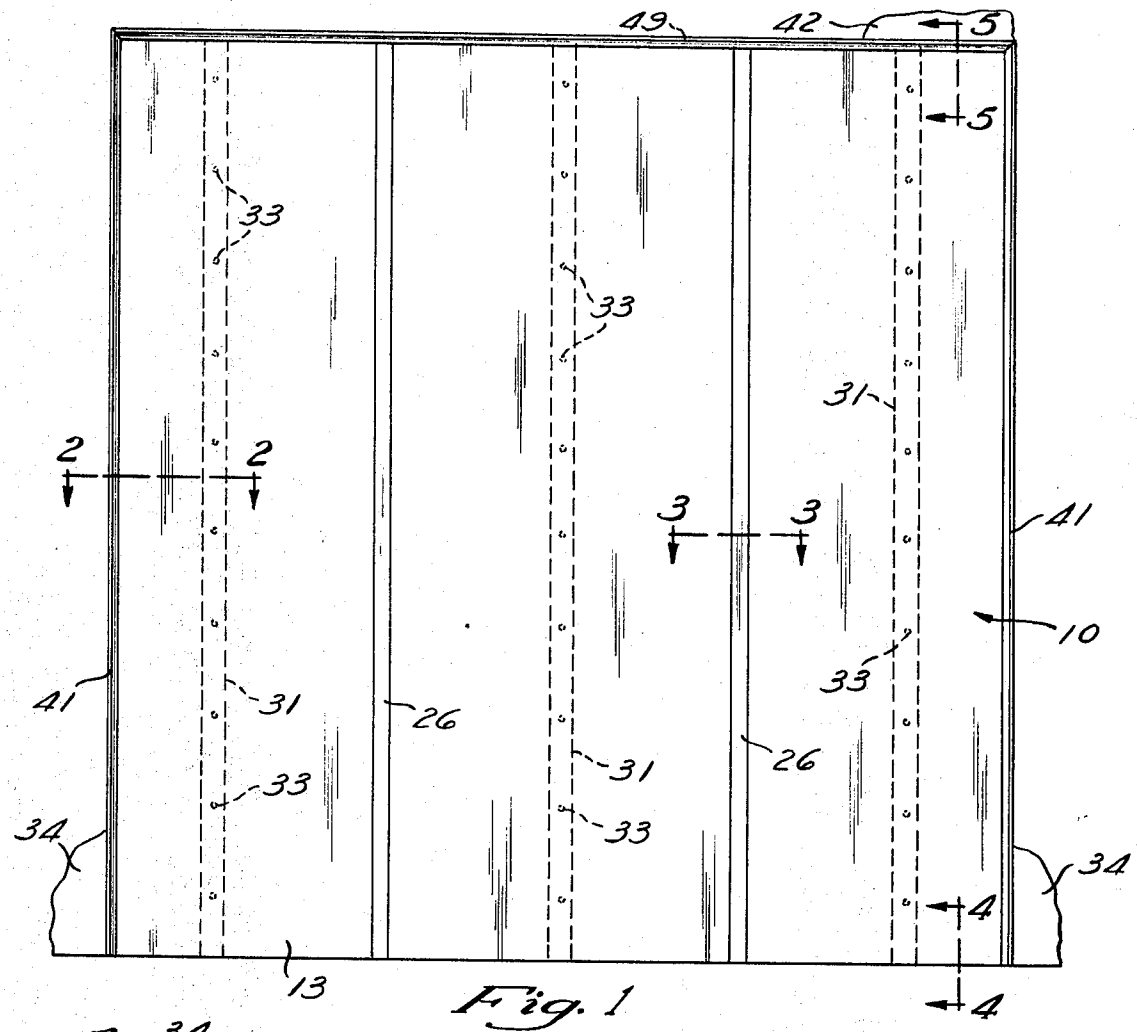


Fig. 1

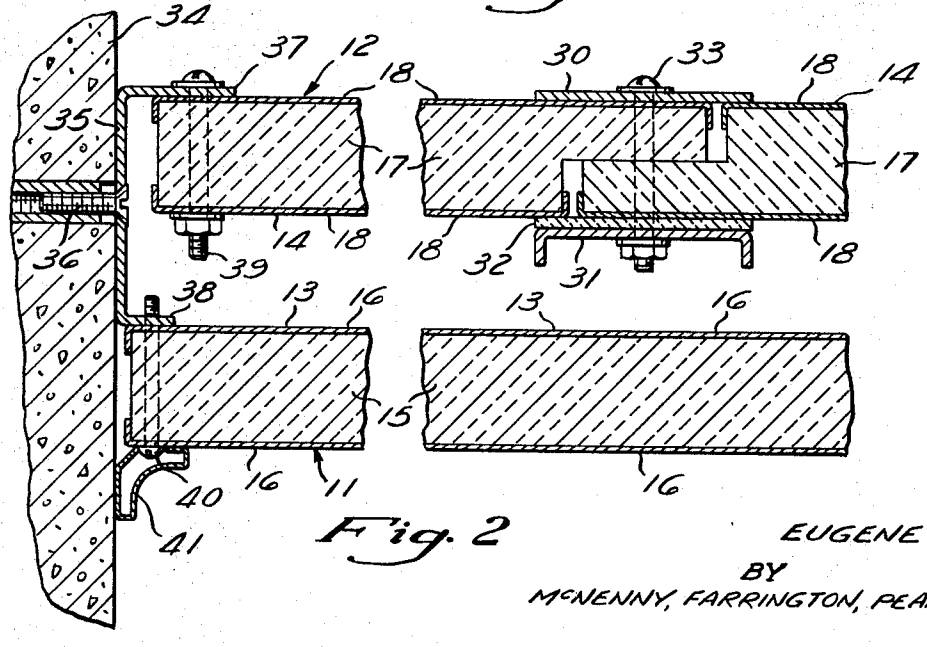


Fig. 2

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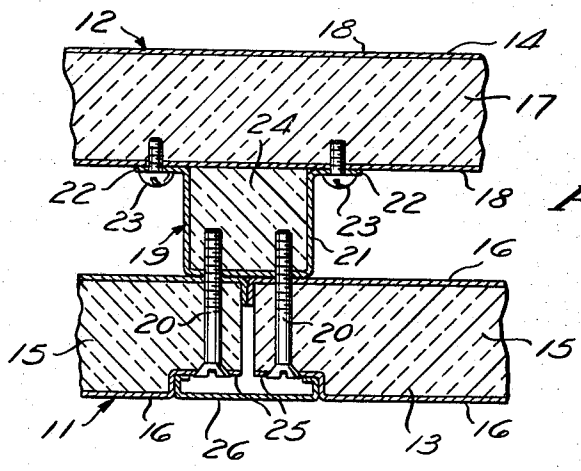


Fig. 3

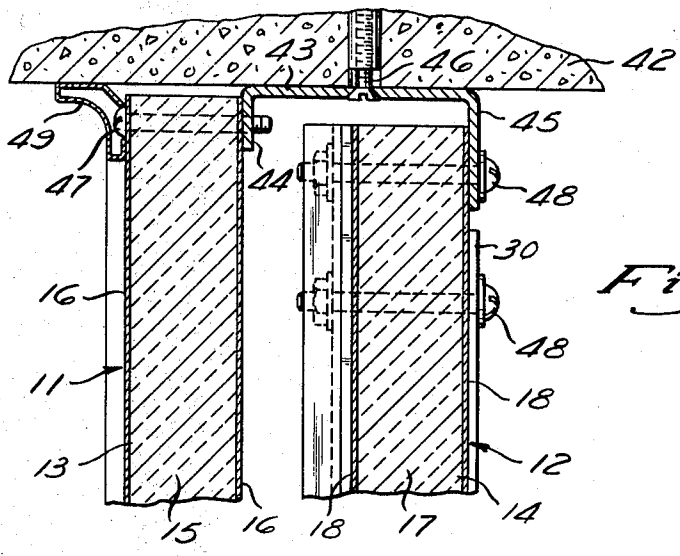


Fig. 5

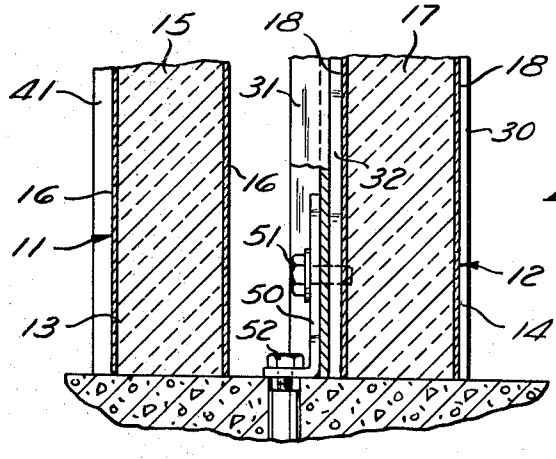


Fig. 4

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FIRE-RESISTANT REMOVABLE WALL PANEL

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U.S. Cl. 52—241 5 Claims

ABSTRACT OF THE DISCLOSURE

A fire-resistant wall having first and second arrays of wall panels which form the two faces of the wall. The wall panels have a core of heat-insulating sheet material and faces of metal sheeting and each panel is joined to an adjacent panel so that the opposite metal faces are spaced from each other to provide interruptions in the heat path along the metal sheets to opposite sheets. Spacer means are provided between the first and second arrays to connect and space the arrays. Each spacer means is spaced from the side edges of at least one of the panels to which it is connected.

BACKGROUND OF THE INVENTION

In general, fire walls dividing one section of a building from another are constructed in masonry. Most municipal fire regulations limit the amount of area that can be built in one section without fire walls. Further, floor-to-floor buildings which are to house people must be adequately fire-protected from floor to floor. With respect to hoistways, this gives a rise to the requirement of a fireproof shaft (with which fireproof hoistway doors are employed).

The formation of hoistway enclosures is typically of masonry construction, including the following adverse inherent characteristics: (1) wall construction because of construction requirements proceeds prior to installation of hoistway equipment, thereby restricting the amount of access available to install hoistway equipment, and (2) untidy conditions effected by typical masonry construction. With respect to dumbwaiter and/or vertical conveyor-type hoistways of substantially smaller cross section than passenger or freight elevator hoistways, access becomes critical and it becomes logical to install the hoistway equipment prior to enclosing the hoistway.

Consequently, there has been a need for a means of installing fire resistant hoistway enclosures which are prefabricated, removable, and usable in a variety of architectural styles in new and existing buildings requiring hoistway installations that do not rely upon masonry construction.

The fire-resistant removable panel concept eliminates the possibility of damage to preinstalled hoistway equipment by the untidiness characteristic of typical masonry construction.

The present invention meets such need. It provides a removable type panel design that meets standard fire resistant wall and hoistway requirements.

SUMMARY OF THE INVENTION

The wall according to this invention includes first and second arrays of wall panels which form the two faces of the wall. Each wall panel has a core of heat-insulating sheet material and faces of metal sheeting. The panels of a face are joined at their edges so that the sheet metal facings are spaced from opposite metal sheets to provide interruptions in the heat path through the wall. The arrays of wall panels are connected by spacer means which is spaced from the side edges of at least one of the panels to which it is connected so that direct heat paths are not

provided between the panel joints of one array and the panel joints of the other array.

BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 is an elevational view illustrating a fireproof wall according to this invention;

FIG. 2 is an enlarged cross-sectional view, the plane of the section being indicated by the line 2—2 in FIG. 1;

FIG. 3 is an enlarged cross-sectional view, the plane of the section being indicated by the line 3—3 in FIG. 1;

FIG. 4 is an enlarged cross-sectional view, the plane of the section being indicated by the line 4—4 in FIG. 1; and

FIG. 5 is an enlarged cross-sectional view, the plane of the section being indicated by the line 5—5 in FIG. 1.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

A fireproof wall **10** is illustrated. The wall **10** may be a hatchway wall for a dumbwaiter shaft or the like and comprises first and second arrays **11** and **12**, respectively, of wall panels. The first array **11** comprises the wall panels **13** and the second array **12** comprises the wall panels **14**.

Each wall panel **13** has a core **15** of heat-insulating sheet material and opposite faces **16** of metal sheeting. The metal sheeting is preferably cold-rolled carbon steel and/or 300 series ASTM stainless steel.

Similarly, each wall panel **14** has a core of heat insulating sheet material **17** and opposite faces **18** of metal sheeting. The metal sheeting **18** is preferably cold-rolled carbon steel and/or 300 series ASTM stainless steel.

As may be seen most clearly in FIG. 3, the wall panels **13** are joined together at their edges and are fixed to a vertically extending spacer **19** by bolts **20**. The spacer **19** comprises a U-shaped sheet metal channel **21** having outwardly flared legs **22** which are secured to one of the panels **14** by screws **23**. The spacer **19** may have a core **24** of heat-insulating material and is joined to the panel **14** at a location which is intermediate the ends of the panel **14** so that the joint between adjacent panels **13** is offset in the through-wall direction from the joints between adjacent panels **14**.

As is shown in FIG. 3, the outer edge faces of the panels **13** are provided with recesses **25** and a trim strip **26** is inserted within the recesses **25** to cover the heads of the bolts **20**. As is shown in FIG. 3, the metal faces **16** of the panels **13** do not extend through the joint, thus providing a break in the heat path between the faces **16**. Of course, heat may be conducted by the bolts **20** but such conduction is small compared to conduction which would otherwise occur if the core **15** of each panel **13** were completely encased by the faces **16**.

Referring now to FIG. 2, each wall panel **14** is provided with a rabbeted edge which cooperates with a rabbeted edge of an adjacent wall panel **14**. A metal strip **30** extends vertically along one side of the joint and a metal channel **31** extends along the other side of the joint. A heat-insulating strip **32** is interposed between the channel **31** and the joint formed by the panels **14**. Through-bolt clamping means comprising bolts **33** tie the strip **30**, the channel **31**, the insulating strip **32** and the edges of the adjacent panels **14** together. The opposite sheet metal faces **18** are spaced from each other to provide a break in the heat path through the rabbeted joint. The insulating sheet **32** serves to minimize heat conduction through the bolts **33**, along the channel **31** and to the faces **18** of the panels **14**.

The endmost edges of the panels **13** and **14** in the arrays **11** and **12** are joined to a supporting wall structure **34** by a channel **35**. The channel **35** is fixed to the supporting wall structure **34** by expansion bolts **36** and has first and second legs **37** and **38** respectively. The leg

37 is fixed to a panel 14 by a bolt 39 and the leg 38 is fixed to a panel 13 by a bolt 40. A corner trim strip 41 extends along the panel 13 to cover the heads of the bolts 40 and to conceal the space between the panel 13 and the supporting wall structure.

The top edges of the panels 13 and 14 are tied to a supporting wall 42 by a similar arrangement which includes a U-shaped channel 43 having legs 44 and 45. The channel 43 is fixed to the supporting wall 42 by an expansion bolt 46. The panels 13 are fixed to the leg 44 by bolts 47 and the panels 14 are fixed to the leg 45 by bolts 48. A top trim strip 49 covers the threads of the bolts 47 and seals the space between the panels 13 and the supporting wall 42.

The arrays 11 and 12 are fixed to the floor by L-shaped brackets 50 which are bolted into the bottom portion of each channel 31 by bolts 51 and are fixed to the floor by expansion bolts 52.

The invention is not restricted to the slavish imitation of each and every detail set forth above. Obviously, wall structures may be provided which change, eliminate, or add certain details without departing from the scope of the invention.

I claim:

1. Fire resistant panel wall construction comprising

(1) a first array of one or more wall panels having a core of heat-insulating material and faces of metal sheeting with the panel sides formed for panel-to-adjacent-panel fastening with spacing of opposite metal faces,

(2) spacer means between and spaced from the side edges of the wall panels of said first array for spacedly supporting a second array of wall panels,

(3) a second array of one or more wall panels spaced in the through-wall direction from said first array by said spacer means and having a core of heat-insulating material and faces of metal sheeting with the panel sides formed for panel-to-spacer fastening with spacing of opposite metal faces,

(4) fastening means for said panel-to-adjacent-panel fastenings and for said panel-to-spacer fastening, said fastening means for said panel-to-adjacent-panel fastenings being spaced from the panels of said second array, and

(5) tie means supporting the outer edges of said first and second panel arrays.

2. Wall construction as in claim 1 wherein said fastening means are through-bolt clamping means.

3. Wall construction as in claim 1 wherein said tie means comprises a U-shaped channel having a first leg fixed to the outer edge of a panel in said first array and a second leg fixed to the outer edge of a panel in said second array.

4. Fire resistant panel wall construction comprising a first array of a plurality of wall panels, each panel being joined at a side edge to an adjacent panel by fastening means, spacer means secured to at least one of said panels at a location which is spaced from the side edges of that panel, said spacer means supporting a second array of a plurality of wall panels, and fastening means for fastening the side edges of adjacent wall panels in said second array to said spacer means, each panel in said first and second arrays having a core of heat-insulating material and faces of metal sheeting the metal sheeting on each panel face being spaced from the metal sheeting of the opposite panel face.

5. Fire resistant panel wall construction comprising a first array of a plurality of wall panels, each such panel being joined by fastening means at a side edge to an adjacent panel to form said first array, a second array of a plurality of wall panels, each such panel being joined by fastening means at a side edge to form said second array, spacer means between and joining panels in said first and second arrays, said spacer means being joined to one of said panels at a location which is spaced from the side edges of said one panel, the fastening means joining the panels of said first array being spaced from the panels of said second array, said panels having a core of heat-insulating material and faces of metal sheeting with spacing of opposite metal faces.

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JOHN F. MURTAGH, Primary Examiner

U.S. Cl. X.R.

52—481, 584