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Meserole

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[54] **METHOD OF REPLACING A DAMAGED BULKHEAD PANEL**

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Related U.S. Application Data

[63] Continuation of Ser. No. 83,537, Oct. 23, 1970, abandoned.

[52] **U.S. Cl.** **52/747,** 52/514, 52/586

[51] **Int. Cl.** **E04b 1/00,** E04g 21/00

[58] **Field of Search** 52/127, 306, 400–403, 52/437, 438, 502, 514, 586, 741, 747, 496

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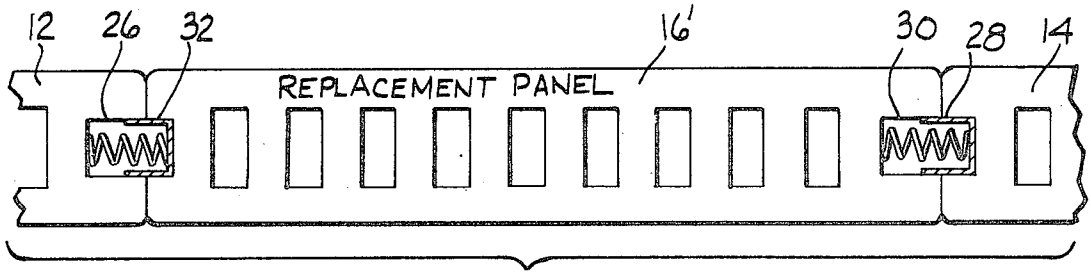
Attorney—John A. McKinney et al.

[57] **ABSTRACT**

A method of replacing a damaged panel in a bulkhead without the necessity of removing or temporarily repositioning undamaged panels on either side thereof. First, the damaged panel is removed by complete destruction. Thereafter grooves are formed on the edges of undamaged panels which face the opening created by the removal of the damaged panel. Grooves are formed on oppositely facing edges of a replacement panel which is then inserted into the opening so that the newly formed grooves on the panels face one another to define a cooperating cavity. Means are provided to substantially fill this cavity so as to interfere with the removal of the replacement panel.

4 Claims, 7 Drawing Figures



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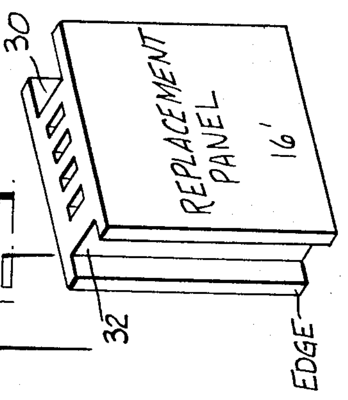

Fig. 3

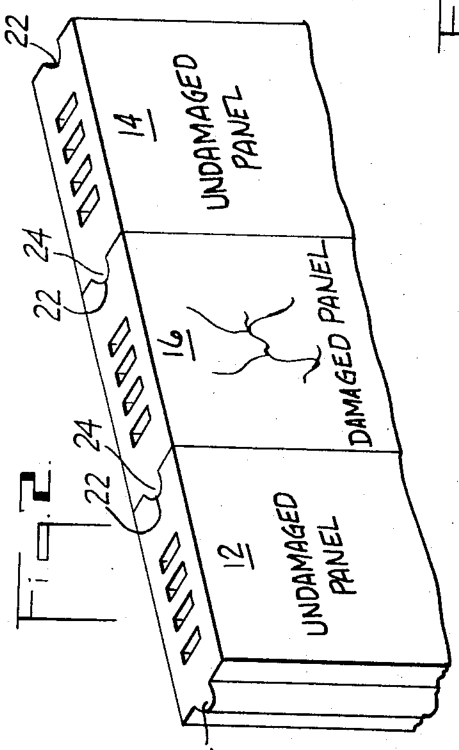

Fig. 2

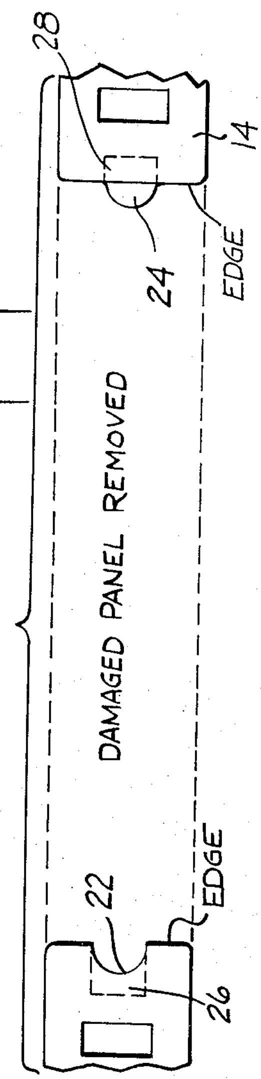

Fig. 4

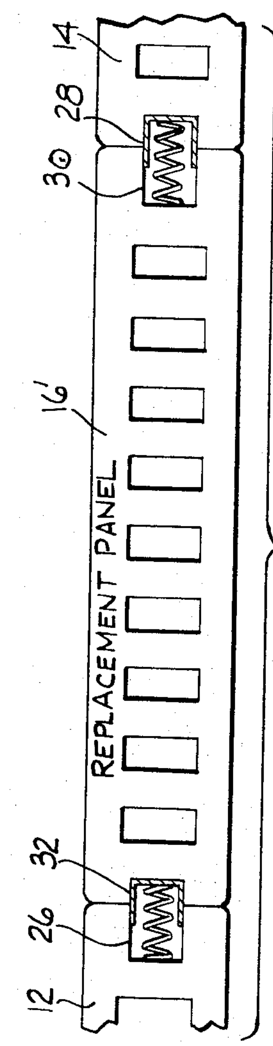

Fig. 5

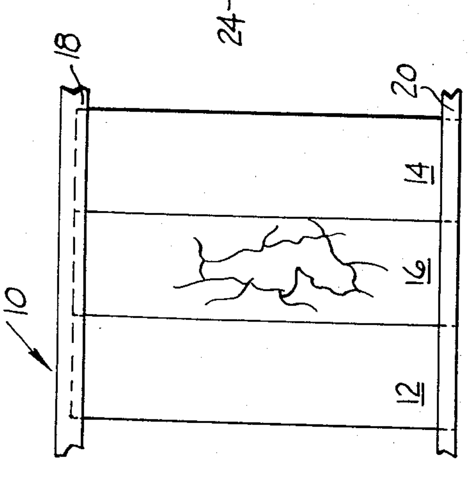

Fig. 1

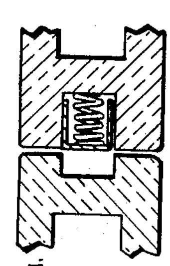

Fig. 6

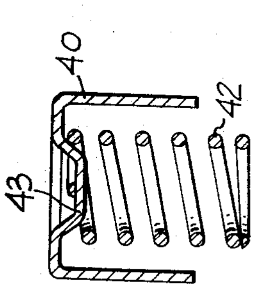

Fig. 7

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METHOD OF REPLACING A DAMAGED BULKHEAD PANEL

This is a continuation of now abandoned U.S. Pat. application Ser. No. 83,537, filed Oct. 23, 1970.

BACKGROUND OF THE INVENTION

It is becoming common in the industry to cast or otherwise form bulkhead wall sections in the factory and then transport the completed panels to building sites for assembly into a wall. These walls (normally non-weight bearing) are comprised of upstanding panels which rest on the floor side by side and connected one to another by a tongue and groove arrangement which resists lateral separation. This invention relates to a method of replacing a damaged bulkhead panel or panels without the necessity of having to remove or otherwise reshuffle undamaged bulkhead panels on either side thereof. Normally, tongue and groove type joints of such bulkhead panels would prevent lateral removal of the panel and the replacement with another. In the past, for removal or insertion of a replacement panel, it was necessary for the longitudinal tongue on one panel be cut away along the vertical length, or that panels on either side thereof be temporarily removed. Once a tongue had been removed, all lateral support and sealing of the joint was lost. It is to this and other shortcoming that the present invention is directed.

SUMMARY OF THE INVENTION

It is an object of this invention to provide a method of replacing a damaged panel or panels in a bulkhead wall.

It is another object of this invention to provide a method of replacing a damaged panel or panels in a bulkhead wall having tongue and groove joints without having to destroy the joints or without having to at least temporarily displace adjacent panels in the wall.

It is a still further object of this invention to provide a method of replacing a damaged panel or panels in a bulkhead wall by first completely destroying the damaged panel, if necessary, and removing it, providing cooperating grooves in the edges of the remaining panels facing the opening, grooving the oppositely facing edges of a replacement panel, inserting the replacement panel so that grooves face each other to define a cooperating cavity and providing therein means for interfering with the walls of the cavity to prevent lateral removal of the replacement panel.

DESCRIPTION OF THE DRAWINGS

The invention will be more fully understood and further objects and advantages will become apparent when reference is made to the following detailed description of the preferred embodiment of the invention and the accompanying drawing in which:

FIG. 1 is an elevation view of a bulkhead wall having plural panels wherein the center panel is represented as damaged.

FIG. 2 is a perspective representation of the bulkhead panels showing their tongue and groove joints.

FIG. 3 is a perspective view of a replacement panel.

FIG. 4 is a plan view of a bulkhead wall after the removal of a damaged panel.

FIG. 5 is a plan view similar to that of FIG. 4 but showing a replacement panel in position.

FIG. 6 is a sectional view of a joint between panels during assembly.

FIG. 7 is an enlarged cross-sectional view of a metal channel and spring to be received in a cavity between panels.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawing and particularly to FIG. 1 there is illustrated in elevation view a bulkhead wall defined by panels 12,14, and 16 the latter being represented as damaged. As shown, there are members such as channels or angles 18, 20 along the top and bottom at the ceiling and floor to which these panels may be secured.

FIG. 2 illustrates in perspective a section of a bulkhead wall comprising a plurality of panels as before with the center panel being represented as damaged. Panels used in defining such bulkhead walls are Marinite, as manufactured by Johns-Manville Products Corporation, or others, of composition such as concrete, expanded polystyrene foam, or diatomaceous earth. They have rigidity and strength so that each panel is capable of standing on end and being substantially self-supporting. A tongue and groove arrangement is provided between panels as indicated by the numerals 22 and 24. The tongue and groove arrangement prevents relative lateral displacement and also serves to insulate the joint and to retard air passage therethrough.

Heretofore, when a panel such as 16 became damaged, replacement was difficult. Not only was it necessary to remove the damaged panel but it was necessary as well during the insertion of a replacement panel to have to move the panels on either side thereof to one side in order to accommodate the tongue and groove arrangement. After the replacement panel was in position, the undamaged panels on either side would be moved back into position so as to make connection again between the tongue and groove. This was extremely difficult when many panels were involved. The present invention permits the insertion of a replacement panel without the necessity of moving the undamaged panels on either side thereof. Often by reason of space limitations, it is not possible to move the undamaged panels to allow insertion of a replacement panel.

As represented in FIG. 4, the damaged panel 16 has been completely removed from the bulkhead wall and undamaged panels 12 and 14 remain. The edges of panels 12 and 14 which face the opening, will normally have a tongue 24 along one edge and a groove 22 along another edge. In the present invention, these edges are reworked (normally by use of a routing tool) to have new grooves. Note in FIG. 4 that groove 22 is replaced with a deep groove or rectangular recess 26, and that tongue 24 on the other side is replaced by a relatively shallow rectangular groove or recess 28. The reason that recess or groove 26 is deeper than groove 28 will be apparent upon observing, in FIGS. 5 and 6, the connection between panels.

After the edges of the undamaged panels, which face the opening, are provided with recesses or grooves 26, 28, a replacement panel is prepared in much the same manner. The replacement panel must be similar in size to the one removed. The tongue and groove configurations on its oppositely facing edges are reworked as before to provide recesses or grooves. These are illustrated in FIG. 3 wherein replacement panel 16 is provided with a deep groove or recess 30 along one edge and a relatively shallow groove or recess 32 along an-

other. By removal of the tongue arrangement on both the undamaged panels and the replacement panels and providing grooves instead, it is possible to insert the new panel laterally into the opening created in the bulkhead wall. In FIG. 5 replacement panel 16 is shown in position between panels 12 and 14. It is shown that groove 26 on panel 12 cooperates with groove 32 on replacement panel 16 to define a cooperating cavity therebetween. Also groove 30 on replacement panel 16 and groove 28 on damaged panel 14 cooperate in a like manner to define a similar cooperating cavity. FIG. 7 is a cross-sectional view of a channel and spring arrangement which is adapted to be received in the above-described cooperating cavities to substantially fill them to prevent removal of replacement panel 16. Channel 40 extends substantially the vertical height or length of the panels. It is provided with plural spaced-apart backing springs 42, which may be secured to the channel by a slit and deformation 43, for urging the channel in one direction as will be evident from an inspection of FIGS. 5 and 6. The channel is of a size which substantially fills the lateral dimension of the cooperating cavity to prevent removal of panel 16.

During the insertion of replacement panel 16, one channel 40 with springs attached is completely received within groove 26 of panel 12 while another channel with springs attached is completely received within another groove 30 of replacement panel 16. This is represented in FIG. 6. Accordingly, there is no dimensional interference as the replacement panel is inserted into the opening. But once the replacement panel is in the position shown in FIG. 5, the channels are moved by their springs to bridge the joint therebetween to provide a seal between the panels by residing partially in both grooves to prevent removal of replacement panel 16.

The materials from which panels such as 12, 14 and 16 are constructed have been previously indicated which provide strength and rigidity. The panels may be of various sizes, however, they generally range from 2 to 3 inches across the edge and some 12 to 18 inches in width. Their length is determined by the requirements of the wall they define, but are normally about 8 feet. The panels usually have tongue and groove arrangements which provide lateral rigidity and strength to the wall. In the event of damage to a panel and subsequent removal, the tongue and grooves are replaced by recesses or grooves by steps of the process herein. Grooves 26 and 30 are each about ¾ inch deep while grooves 28 and 32 are approximately ⅜ inch deep. The deeper groove receives spring 42 and a part of channel 40. The dimensions given herein are general and are not meant to be limiting.

The disclosure herein has been directed to the replacement of a single damaged panel. This will normally be the need, however, in the event plural panels are to be replaced, the same method applies. The replacement panel then would be comprised of plural panels which would have recesses or grooves only on opposite sides and with regular tongue and groove connections therebetween.

An improved method has been defined herein for replacing a damaged panel in a bulkhead without necessitating, even temporary, removal of adjacent panels. While a preferred embodiment of the invention has been disclosed, it will be apparent that variations from the particular arrangement may be made without departing from the basic concept or spirit of the invention.

What I claim is:

1. In an assembly wall defined by a plurality of vertically disposed generally self-supporting panels having cooperating tongue and groove means along their vertically disposed adjacent edges for establishing a connection therebetween, a method of replacing a damaged panel without moving adjacent undamaged panels on either side thereof and without requiring a special predesigned replacement feature in said panels, said method comprising:

a. removing the damaged panel without removing said adjacent panels and such that said adjacent undamaged panels respectively include exposed tongue means and exposed groove means facing the opening caused by removal of the damaged panel;

b. replacing each of said exposed groove means and tongue means with vertically disposed new groove means while said adjacent undamaged panels remain assembled;

c. providing a replacement panel which is of a size receivable within said opening and which includes tongue means on one vertically disposed edge and groove means on an opposite vertically disposed edge;

d. replacing each of the tongue means and groove means of said replacement panel with vertically disposed new groove means;

e. positioning said replacement panel into said opening such that the new groove means on opposite sides thereof are aligned with respective new groove means on said undamaged panels so as to define cooperating cavities; and

f. positioning filler means within said cooperating cavities of a size substantially filling said cavities thereby establishing interference with removal of the replacement panel from said opening.

2. The claimed method of claim 1 wherein at least one of said filler means includes a coupling member movable between a biased expanded state and a compressed state and wherein the step of filling said cooperating cavity means includes,

a. positioning said coupling member within one of the new groove means defining one of said cooperating cavities,

b. at least momentarily maintaining said coupling member in a compressed state so that it is substantially completely disposed within the new groove means, and

c. moving said replacement panel into said opening until the free groove means of said last-mentioned cavity allows the coupling member to move to its expanded state and into said free groove means.

3. The claimed method of claim 1 wherein those new groove means replacing previous groove means in each of said panels extend deeper into the panels than those new groove means replacing the tongue means in each of said panels, each of said deeper new groove means being aligned with a less deep new groove means for defining one of said cooperating cavities and wherein said filler means within each of said cavities is positioned substantially entirely across the cavity so as to provide a snug fit therein.

4. The claimed method of claim 3 wherein each of said filler means includes a U-shaped coupling member

having leg portions substantially equal in length to the depth of said deeper new groove means and compressible spring means disposed between said leg portions, and wherein the steps of positioning each of said filler means into a cooperating cavity includes,

a. positioning said U-shaped coupling members and said associated spring means partially within corresponding deeper new groove means,

b. momentarily compressing each of said spring means such that the cooresponding coupling member and spring means are substantially completely disposed within a corresponding deeper new groove means, and

c. positioning said replacement panel into said opening allowing said coupling members by the force of said spring means to move into the less deep new groove means when the latter become aligned with said deeper new groove means.

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