United States Patent

Fisher et al.

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[54] **COFFERED CEILING SYSTEM**

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Related U.S. Application Data

[63] Continuation of Ser. No. 751,972, Aug. 12, 1968, abandoned.

[52] **U.S. Cl.** **52/145,** 52/484, 52/730, 52/475, 52/495

[51] **Int. Cl.**.....**E04b 1/82,** E04b 5/52

[58] **Field of Search**.....52/484–486, 730–732, 52/144, 145, 656, 475, 476; 287/189.36 D

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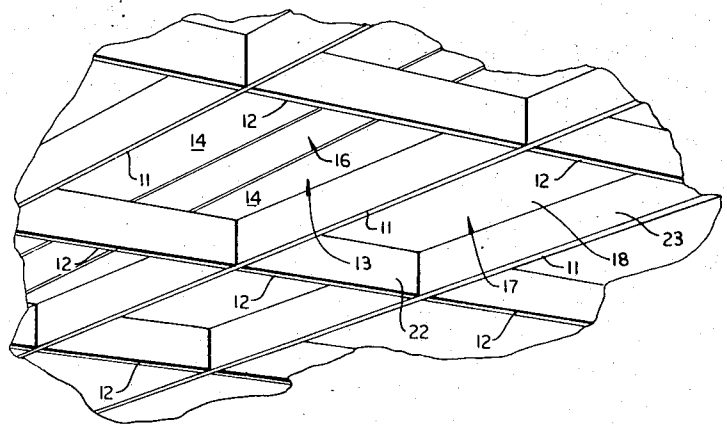
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[57] **ABSTRACT**

A conventional suspended ceiling grid supports coffer frames, each frame prefabricated from four sheet metal strips of identical construction formed with inwardly extending flanges at the top and bottom and an upturned flange at the inner edge of the top flange, and groove-forming flanges at a single end of each member receiving the unflanged end of another of the members, the four members of a frame being fastened together and then installed to the grid and topped by a coffer panel.

17 Claims, 8 Drawing Figures



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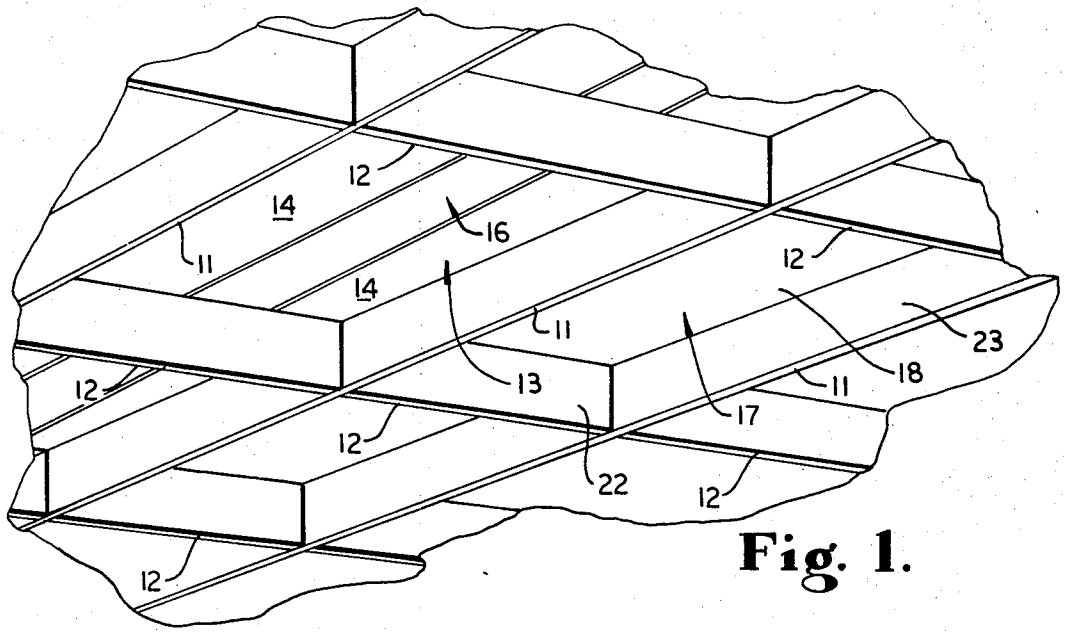


Fig. 1.

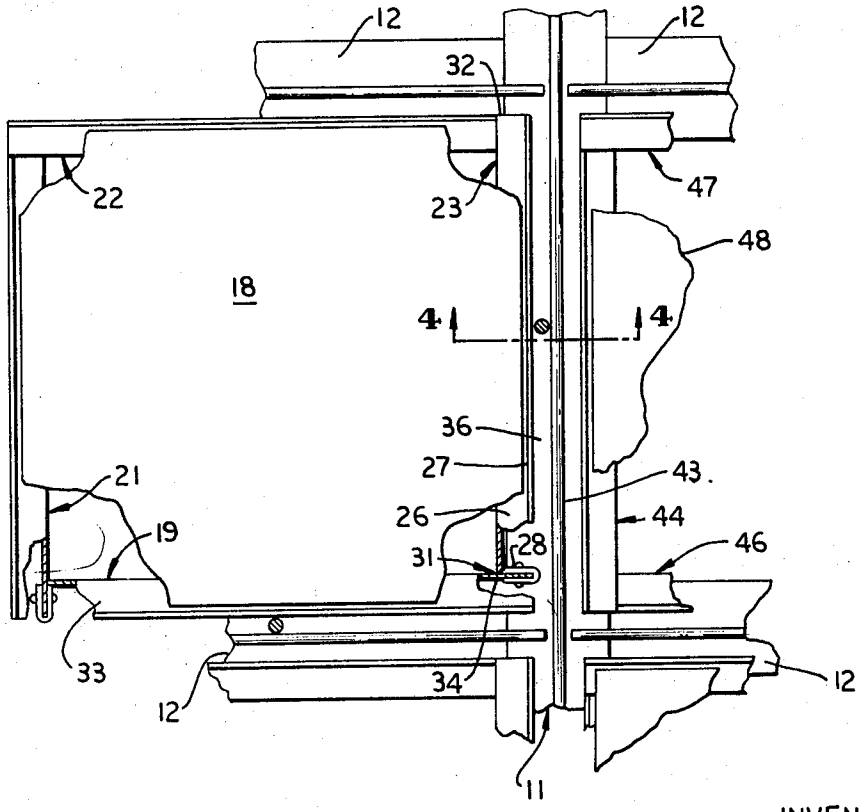


Fig. 2.

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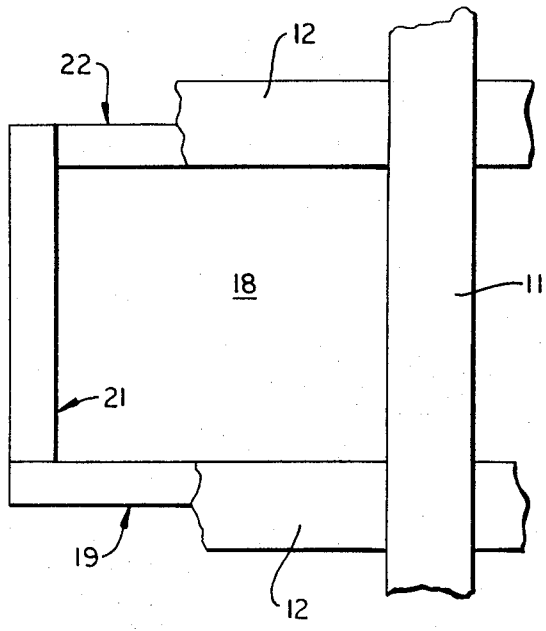


Fig. 3.

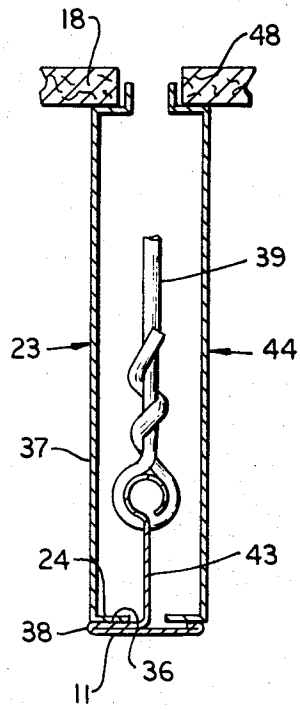


Fig. 4.

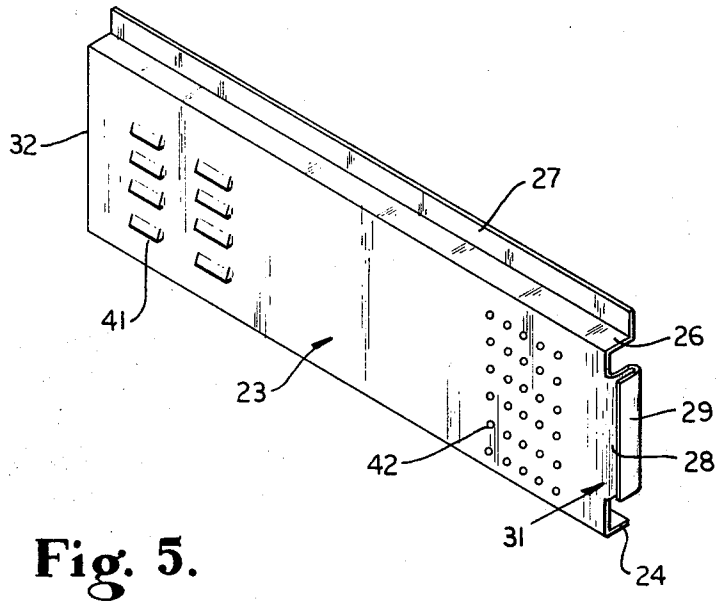


Fig. 5.

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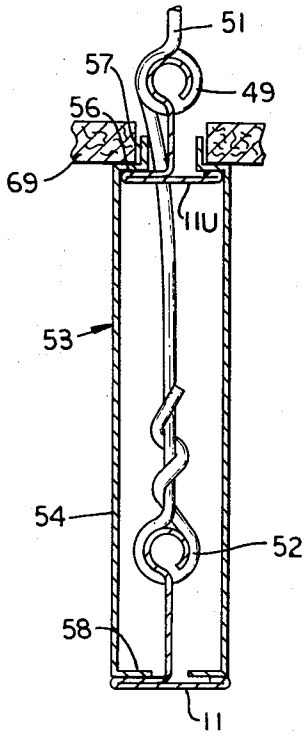


Fig. 6.

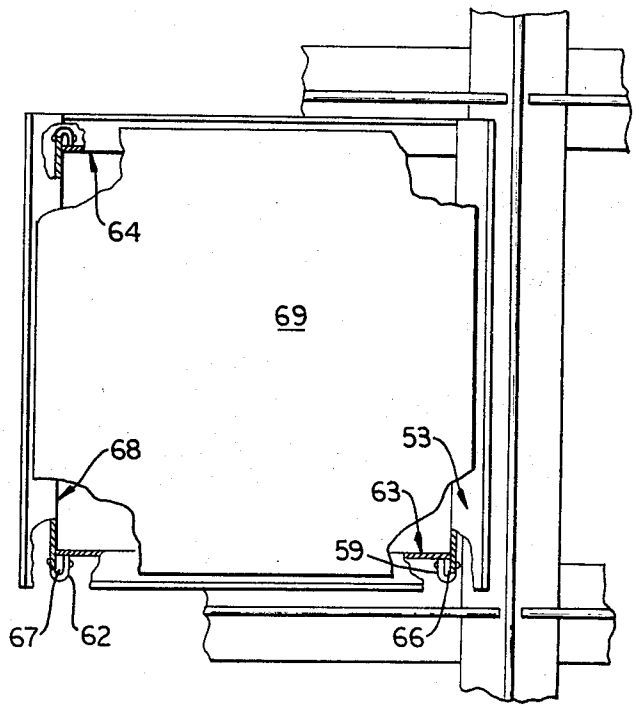


Fig. 7.

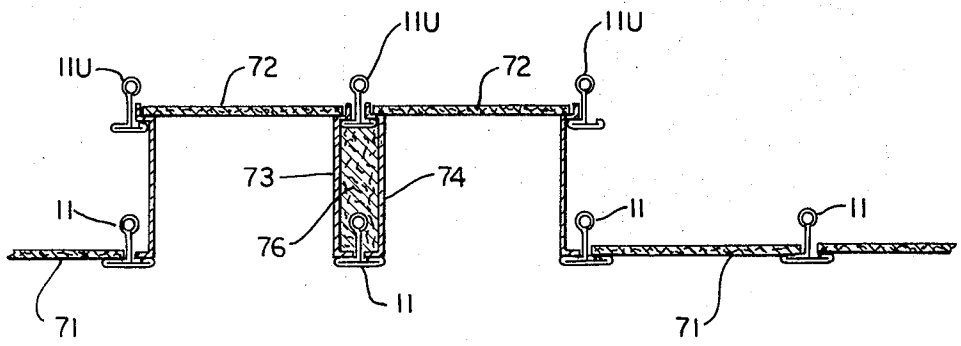


Fig. 8.

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COFFERED CEILING SYSTEM

This is a continuation of application Ser. No. 751,972, filed Aug. 12, 1968, now abandoned.

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to suspended ceilings and more particularly to those of the coffered type.

2. Description of the Prior Art

Coffered ceilings have been known and used since the early ages of building construction. Some of the early efforts required great time, effort, and expense. Some of the more recent work with ceiling construction of the coffered type has resulted in some improvements and variations. Examples can be seen in U.S. Pat. Nos. as follows:

2,884,512	Wakefield	Apr. 28, 1959
3,277,624	Cornell	Oct. 11, 1966
3,359,697	Smith et al.	Dec. 26, 1967
Re 25,628	Kruger	Aug. 4, 1964

In these times when building construction costs continue to rise rapidly, there has remained a need for still further cost reduction in ceiling construction, consistent with favorable appearance, versatility, and satisfactory performance. The present invention is directed to achievement of this.

SUMMARY

Described briefly, in a typical embodiment of the present invention, a coffer frame having the desired exterior appearance characteristics for the overall design effect to be achieved, is prefabricated from pre-formed sheet members with appropriate flanging thereon. The flanges facilitate the mounting thereof in a conventional suspended grid, as well as serving to receive and locate coffer panels.

BRIEF DESCRIPTION OF THE DRAWING

The full nature of the invention will be understood from the accompanying drawings and the following description and claims.

FIG. 1 is a perspective view of a coffered ceiling incorporating the present invention and viewed from below.

FIG. 2 is a top plan view of a panel of this ceiling of FIG. 1, with portions being broken away to illustrate certain features.

FIG. 3 is a bottom plan view of the portion shown in FIG. 2.

FIG. 4 is a section taken at line 4—4 in FIG. 2 and viewed in the direction of the arrows.

FIG. 5 is a perspective view of a typical wall member of one embodiment of the invention.

FIG. 6 is a section like FIG. 4 but showing an embodiment with a double grid suspension.

FIG. 7 is a plan view of a coffer frame for the double grid suspension arrangement.

FIG. 8 is a section on a vertical plane and illustrating a combination coffered and un-coffered ceiling incorporating an embodiment of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings in detail, FIG. 1 shows a ceiling using a grid system with main runners 11 and cross runners 12. One of a number of coffers is provided at 13 and includes panels 14 at each side of a recessed lighting fixture 16, the entire coffer being recessed in a frame supported by two of the main runners 11 and two of the cross runners 12. Another coffer is shown at 17 and does not include a lighting fixture. This coffer also has a coffer panel 18 frame by four walls supported on two of the main runners 11 and two of the cross runners 12. Details of this arrangement will be better understood upon reference to FIG. 2.

Referring to FIG. 2, we are looking down on the top of the coffer panel 18, the corners of which are broken away to show details of the supports therefor. These supports are four identical frame members 19, 21, 22, and 23. The construction details of these members can be best appreciated by referring to FIGS. 4 and 5 along with FIG. 2. In addition to the upstanding wall portion thereof, (having face 37 in FIG. 4, for example) which happens to be planar in the illustrated example, there is an inwardly turned flange 24 at the lower margin, and an inwardly turned flange 26 at the upper margin, an upwardly turned flange 27 at the inner margin of flange 26, an inwardly turned flange 28 at one end margin, and an outwardly turned flange 29 beginning at the inner margin of flange 28 and extending back outward parallel to flange 28 and forming an outwardly opening groove 31 between flanges 28 and 29. There is no flange at the opposite edge 32 of the vertical face of the member. This latter detail might be more readily apparent upon reference to member 19 in FIG. 2 wherein the broken out portions of the top flange 33 thereof help to show that the unflanged edge portion 34 of member 19 is received in the groove 31 of the member 23. It is secured in this location by suitable means such as the rivet shown, but a variety of other means might also be used, including spot welding, for example. As shown in FIGS. 2 and 4, the frame member 23 rests on the outwardly extending lower flange or shelf 36 of the runner 11. The vertical outer face 37 is virtually flush with the outer margin 38 of the runner shelf 36. The panel 18 of acoustical board or other material rests on the upper flange or shelf 26 of member 23. It rests likewise on the corresponding portions of the other three members of the coffer frame. It is in this manner that a coffer is provided in the suspended ceiling supported by the grid of runners 11 and 12 suspended from an overhead structure by wires 39.

The coffer wall members thus far described can be incorporated in virtually any conventional suspended ceiling grid. They can be of virtually any dimensions desired and a variety of materials, thicknesses, surface finishes, and fastening means can be used. Standard lighting fixtures can be used within the coffer frame, either of the surface or recessed types, the latter being illustrated by way of example at 16 in FIG. 1. The exterior surfaces such as surface 37 of coffer frame member 23 can be painted, can have a simulated wood grain finish, or any other desired finish. A variety of decorative effects can be readily achieved thereby. Moreover it can have designs thereon, either flat or elevated. Varieties of perforations can be used such as

the air delivery type slots shown at **41** in FIG. **5**, or sound absorbent circular perforations as at **42**.

As shown in FIG. **2** and FIG. **4**, the opposite side of the web **43** of runner **11** can also be provided with a coffer including the coffer frame members **44**, **46**, and **47** (the fourth coffer wall member being deleted to conserve space in the drawing) and the coffer panel **48**. The coffer frame rests on the lower flange or shelf of each of the four runners defining the coffer area, just as in the previously described coffer.

There are instances when it might be desirable to employ the present invention in a ceiling of a type which already has a 2 hour fire rating. An example is shown in FIG. **6** where, in addition to the lower grid, a virtually identical upper grid is employed with runners in vertical projection with those of the lower grid. Runner **11U** is an example. It is supported by a loop **49** in the hanger wire **51** in much the same manner as the lower runner **11** is supported by the loop **52**. The coffer wall member **53** has the planar vertical wall surface **54** in the illustrated example, although non-planar surfaces might also be used as suggested above with reference to the previous embodiment. At the upper edge of this wall is an inwardly turned flange or shelf **56** with an upturned flange **57** at the inner margin thereof. At the lower margin of the surface **54** is an inturned flange **58** resting on the shelf of the lower runner **11**.

Although the wall member of this embodiment as thus described is the same as in the previously described embodiment, FIG. **7** illustrates a difference in that the end margins are not flanged in the same way as in the previously described embodiment. In this case, as shown in FIG. **7**, a reverse turned flange **59** is provided at one end and flange **62** at the other end, to form facing grooves at the opposite ends of the member. The wall members forming the two opposite walls of the coffer are formed in this way. The other two walls are formed by members **63** and **64** which have inwardly turned end flanges at **66** and **67**, for example on member **63**. These flanges are received in the grooves of the wall members **53** and **68** and secured thereto by rivets, spot welding or other suitable means. So it is seen that this coffer frame differs somewhat from the other one but serves to mount a coffer panel **69** (FIG. **6**) to complete the assembly in a manner similar to that for the previously described embodiment.

FIG. **8** is a vertical section through a ceiling employing regular acoustical ceiling board panels **71** supported on some of the runners **11**, and similar or identical panels at **72** received on upper runners **11U**. In this instance the panels **72** are coffers, and the coffer frames may be formed of components as shown and described with reference to FIGS. **6** and **7**. In this instance also, the space between the coffer wall members **73** and **74** is batt filled as shown at **76** which, in cooperation with perforations in the wall members **73** and **74** such as shown at **42** in FIG. **5**, serves a sound reduction purpose.

While the invention has been disclosed and described in some detail in the drawings and foregoing description, they are to be considered as illustrative and not restrictive in character, as other modifications may readily suggest themselves to persons skilled in this art and within the broad scope of the invention, reference being made to the appended claims.

The invention claimed is:

1. In a coffered ceiling, the combination comprising:

a plurality of generally upstanding wall members, each of said members having its ends joined with two others of said members to form a first coffer frame having a plurality of walls; and

a suspended grid receiving said first coffer frame thereon, said grid having a plurality of elongated horizontally extending main runners in parallel horizontally spaced relationship to each other and having a plurality of elongated horizontally extending cross runners in parallel horizontally spaced relationship to each other and intersecting said main runners, the runners of one of said pluralities of runners having outwardly extending shelves thereon, one of said wall members of said first frame being rested upon and supported by one of said shelves on one of said runners, and another of said wall members on an opposite wall of said first frame being rested upon and supported by one of said shelves of another of said runners whereby said first coffer frame is supported on said grid;

at least two of said wall members having thereon panel support means and panel locating means adjacent an upper margin thereof.

2. The combination of claim **1** wherein:

each of said wall members has a vertical wall surface portion with a first inturned flange at the top margin thereof serving as the said panel support means thereof; and a panel rests on said first inturned flange of at least two of said wall members to form a coffer and is confined between said panel locating means said panel resting loosely on said flanges and being freely movable upwardly from said flange to facilitate removal of said panel from said coffer frame.

3. The combination of claim **2** wherein:

at least one of said members has perforations in said vertical wall surface thereof and a sound absorbent material is disposed at the back of said perforated vertical wall surface portion under said flange.

4. The combination of claim **1** wherein:

at least one of said members has perforations in a vertical wall surface thereof to permit passage of fluid therethrough.

5. The combination of claim **1** wherein:

a first two of said members have vertical wall surface portions with flanges at end margins thereof turned back toward each other to form facing grooves on each of said members, and;

the other two of said members have vertical wall surface portions with inwardly turned flanges at end margins thereof received in said grooves.

6. The combination of claim **1** wherein:

each of said members has a vertical wall surface portion with a first inturned flange at the top margin thereof providing said panel support means and an upturned flange at the inner margin of said inturned flange providing said panel locating means, and a second inturned flange at the lower margin of said wall surface portion, and a third inturned flange at an end margin of said wall surface portion, and an outwardly turned flange beginning at the inner margin of said third flange and extending generally parallel to said third flange and providing an outwardly facing vertical groove to receive the vertical wall portion of another of said members at an unflanged end thereof.

7. The combination of claim 6 wherein the unflanged end of each of said members is received in the vertical groove in an adjacent one of said members and affixed thereto.

8. The combination of claim 6 wherein a panel rests on at least two of said wall members and between said upturned flanges to form a coffer.

9. The combination of claim 1 and further comprising:

upstanding webs on said runners;

a plurality of frames like said first frame, said frames being disposed in adjacent areas of said grid on opposite sides of said webs,

a plurality of panels, each different one of said panels being mounted to a different one of said frames to form a coffer.

10. The combination of claim 9 wherein said frames are received entirely atop said suspended grid, the combination further comprising:

a second suspended grid above the first mentioned grid, said wall members having upper flanges extending horizontally over portions of said second grid, and said panels being received on said wall members at said flanges.

11. A member for a coffered ceiling, said member comprising:

a wall portion which is longer from end to end than it is high from the lower margin to the upper margin thereof;

an upper flange inwardly turned at the upper margin of said wall portion;

a lower flange inwardly turned at the lower margin of said wall portion;

a third flange inwardly turned from one end margin of said wall portion, and;

an outwardly turned flange beginning at the inner margin of said third flange and extending generally parallel to said third flange and providing a outwardly facing groove between said third flange and said outwardly turned flange.

12. The member of claim 11 wherein the other end margin of said wall portion is unflanged and receivable in a groove of another member like the member defined in claim 11.

13. The member of claim 11 and further comprising:

a locator flange upwardly turned at the inner margin of said upper flange, said member terminating at the upper margin of said locator flange.

14. In a coffered ceiling, the combination comprising:

a plurality of coffer frame forming members, each of said members having its ends joined with two others of said members to form a first coffer frame, at least two of said members having panel support means thereof adjacent an upper margin thereof;

a suspended grid receiving said first frame thereon, said grid having a plurality of elongated horizontally extending main runners in parallel horizontally spaced relationship to each other and having a plurality of elongated horizontally extending cross runners in parallel horizontally spaced relationship to each other and intersecting said main runners, the runners of one of said pluralities of runners having outwardly extending shelves thereon, one of said members of said first frame being rested upon and supported by one of said shelves on one of said runners, and another of said members of said first frame being rested upon and supported by one of said shelves of another of said runners whereby said first coffer frame is supported on said grid;

a plurality of coffer frames like said first frame, said frames being disposed in adjacent areas of said grid,

each of said frames being supported on said shelves of said grid runners independently of each other of said frames.

15. The combination of claim 14 wherein:

said frames are received entirely atop said suspended grid.

16. The combination of claim 14 and further comprising:

a plurality of panels received on said panel support means.

17. The combination of claim 16 wherein:

at least two of said members of each of said frames has panel locating means adjacent upper margins thereof, with one of said panels being located between two of said locating means in one of said frames to form a coffer.

* * * * *