

[54] **JOINT STRUCTURE FOR SUSPENDED CEILING SYSTEM MEMBER**

2,316,389 4/1943 Atkinson..... 287/58 R
3,294,428 12/1966 Licklitter et al. 52/DIG. 5

[75] Inventors: **Joseph W. Boylan**, Cincinnati, Ohio;
John W. Shenk, Columbia, Pa.

Primary Examiner—Henry C. Sutherland
Assistant Examiner—Mark Wolk

[73] Assignee: **Armstrong Cork Company**,
Lancaster, Pa.

[22] Filed: **Dec. 23, 1971**

[21] Appl. No.: **211,316**

[57] **ABSTRACT**

[52] U.S. Cl..... 52/573, 52/474, 52/726,
52/DIG. 5

[51] Int. Cl..... E04b,5/58

[58] Field of Search 287/63, 64, 65, 189.36 A, 58 R;
52/573, 632, 664, DIG. 5, 484, 656, 726

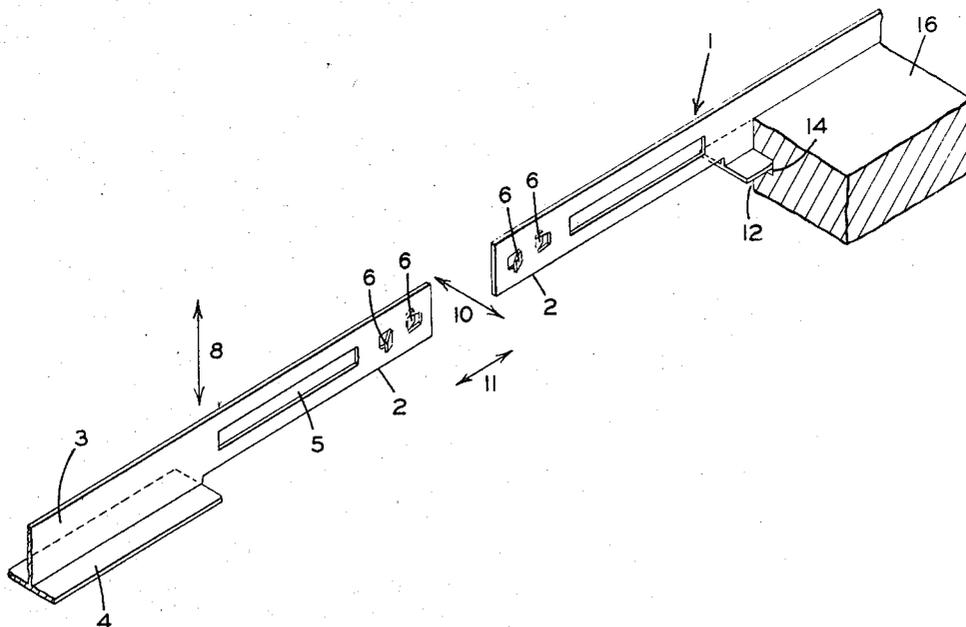
A cross member is provided with a flange which is placed in the edge kerf of ceiling boards. The cross member supports the ceiling boards in position. A joint structure is provided to connect together two adjacent cross members. The joint structure is so arranged with a slot and tab that the two cross members can be somewhat adjustable in length.

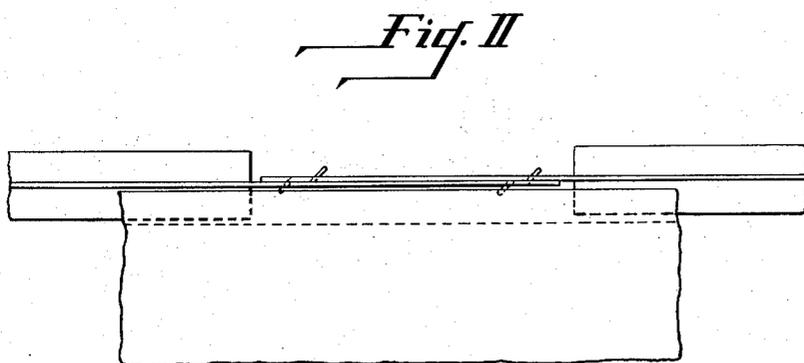
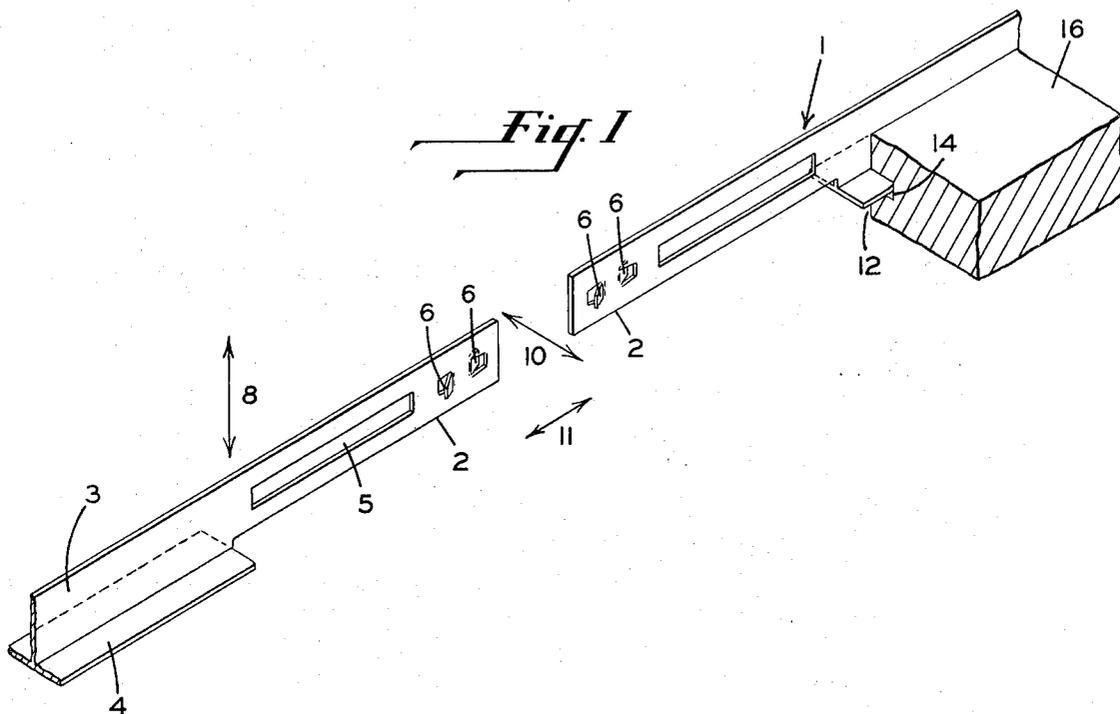
[56] **References Cited**

UNITED STATES PATENTS

3,284,977 11/1966 Licklitter et al. 52/DIG. 5

2 Claims, 2 Drawing Figures





INVENTOR
JOSEPH W. BOYLAN
JOHN W. SHENK

BY

ATTORNEY

JOINT STRUCTURE FOR SUSPENDED CEILING SYSTEM MEMBER

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention is directed to a suspended ceiling system and, more particularly, to a joint structure for cross members of the suspended ceiling system.

2. Description of the Prior Art

U. S. Pats. No. 2,710,679 and No. 3,374,596 are two typical examples of suspended ceiling systems and the joint structures used to fasten together the ceiling suspension members. The first-mentioned patent uses a plate structure 16 to function as a splice clip to hold adjacent support members together. The second-mentioned patent has the ends of the support members so formed that they can lock together. Neither of these two structures are capable of adjustment.

In U. S. Pat. No. 2,499,278 there is shown a suspended ceiling system of the type wherein the joint structure herein would be used with the runner 70 therein being used to support the ceiling units by having the ceiling units carried on the flanges of the support. The joint structure herein is particularly useful for fastening together two adjacent support elements similar to runners 70 of the above patent.

SUMMARY OF THE INVENTION

The primary inventive feature herein is the end detail for a cross member of a suspended ceiling system. Each of two adjacent ends of the members has a slot or opening in the extension from the vertical rib of the cross member. In addition, each extension has a tab extending to either side of the extension. Two adjacent cross members are placed end-to-end with the extensions being placed side-by-side. When this is done, one of the tabs of the one cross member extends into the slot of the adjacent cross member and vice versa relative to the other slot and tab construction. Whenever a force is moved in a direction perpendicular to the plane of the flanges of the cross members, there will be no movement of the two cross members at the joint structure. When there is movement of the two cross members in a direction perpendicular to the plane of the extension, the two cross members will separate. When there is movement of the two cross members along their longitudinal axis, the two extensions will not separate, but the cross members will be somewhat longitudinally adjustable. Ceiling panels on either side of the joint structure will tend to hold the joint structure together in an assembled ceiling.

The joint structure herein is particularly useful for the ordinary homeowner who is putting up his own ceiling system. Here is a joint structure which can be readily fastened together and will allow the homeowner a certain degree of adjustability so that he need not place the ceiling system together with the high degree of accuracy which is normally required with conventional ceiling suspension support structures.

BRIEF DESCRIPTION OF THE DRAWING

FIG. I is an exploded isometric view of the invention herein; and

FIG. II is a top view of the assembled joint structure.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In a normal ceiling suspension system, the cross member assembly 1 is the element that supports the ceiling panel if it is the type of panel which has a kerf in its edge to receive the flange of the cross member. This provides a concealed ceiling suspension grid system. The cross members are usually supported from main runner members. The main runner members are supported by wires from the structural ceiling of a room.

Referring to FIG. I, the two adjacent main cross member assemblies 1 are identical. Each of the members has an extension 2 which extends out beyond the main body portion of the cross member. The main body portion of the cross member is composed of a vertical rib structure 3 and a horizontal flange structure 4 which extends out on either side of the vertical rib 3. The extension 2 of the cross member has the joint structure which is used to fasten together the two adjacent cross members. Each of the extensions 2 has a slot or opening 5 and two offset tabs 6. On each extension, a tab extends to either side of the extension portion of the cross member.

When two adjacent cross member extensions are placed side-by-side, one of the tabs 6 in the one cross member slides into the slot 5 of the adjacent cross member. In turn, one of the tabs 6 of the adjacent cross member slides into the slot 5 of the other cross member. The positioning of the tab in the slot of each cross member provides a structure which can take an up-and-down direction movement in the direction of the arrow 8 in the plane of the extension members. Thus a force applied in the direction of the arrow 8 will not move one extension 2 relative to the other extension member 2.

However, a force moved in the direction of the arrow 10 will readily cause separation of the two cross member extensions. Normally the horizontal flanges 12 of the cross members are inserted in grooves or kerfs 14 cut into ceiling panel units 16. The ceiling panels are supported on the flanges 12. Now since there will be ceiling panels on either side of the cross member, the presence of the ceiling panels on either side of the joint will prevent the separation of the cross member extensions in the direction 10. This will be particularly true when the complete ceiling structure is up and the ceiling panels extend from one wall to the opposite wall. There will then be no give in the ceiling structure to permit one to pry two ceiling panels sufficiently far enough apart to permit separation of the two extension members.

The particularly nice feature of the tab and slot structure above described is that it will permit an adjustment or expansion of the overall cross member structure. That is, the cross member structure will be permitted limited movement along the axis of the cross member, along the direction of arrow 11, to permit a relative adjustment of the length of two adjacent cross members. For example, the cross members are generally sold in approximately four-foot lengths. If one were installing the ceiling system in a room that had a little less than eight feet between two adjacent walls, the adjustability feature afforded by the tabs and slots would permit one to extend the cross member system out until it approximately filled the distance between two adjacent walls.

Alternatively, if the homeowner would make an error when he was cutting one of the cross members to a certain size, there would be permitted a little adjustability to compensate for the small error. In addition, the system is very easy to assemble together, there being no need to lock together different tab structures or plates. Once the ceiling system is installed, it is possible that there can be a little give in the cross member structure so that the cross members can slide relative to each other. This feature is of some value, should there be a fire and there be the generation of sufficient heat to cause expansion of the cross members. If no expansion of the cross members were permitted, the cross members would tend to buckle.

What is claimed is:

1. In a suspended ceiling system including a plurality of frame members which are utilized to suspend ceiling panel structures in position, at least two cross member structures placed in an end-to-end relationship, the improvement comprising an improved joint structure for fastening together the cross members, each of said cross members having an extension projecting outwardly from the cross member, the main body of the cross member being composed of a vertical rib and a horizontal flange and the extension extends outwardly from the vertical rib, each extension on each cross

member having an elongated slot structure therein and two bent-out tabs extending on opposite sides of the plane of the extension, said two extension members being placed in a side-by-side relationship, and when the extension members are in a side-by-side relationship, at least one tab of an extension member being inserted into the slot of the adjacent extension member whereby the cross member structures are capable of adjustment along the longitudinal axis of the cross members and will be able to restrain separation against a force applied in a direction in a line perpendicular to the horizontal flange in the plane of the extension members, and ceiling panel structures are positioned on the horizontal flange and are located on either side of the two mating extension members of two adjacent cross members so that the presence of the panels on either side of the mating extension members will prevent separation of the cross member extensions in a direction perpendicular to the plane containing the extensions.

2. The system of claim 1 wherein the elongated slot structure extends along the extension member and is sufficiently long to provide adjustment of the length of two adjacent cross members.

* * * * *

30

35

40

45

50

55

60

65