Nov. 15, 1966 R. P. LICKLITER ET AL 3,284,977

EXPANSION SPLICE

Filed April 8, 1965

Fig. 1.

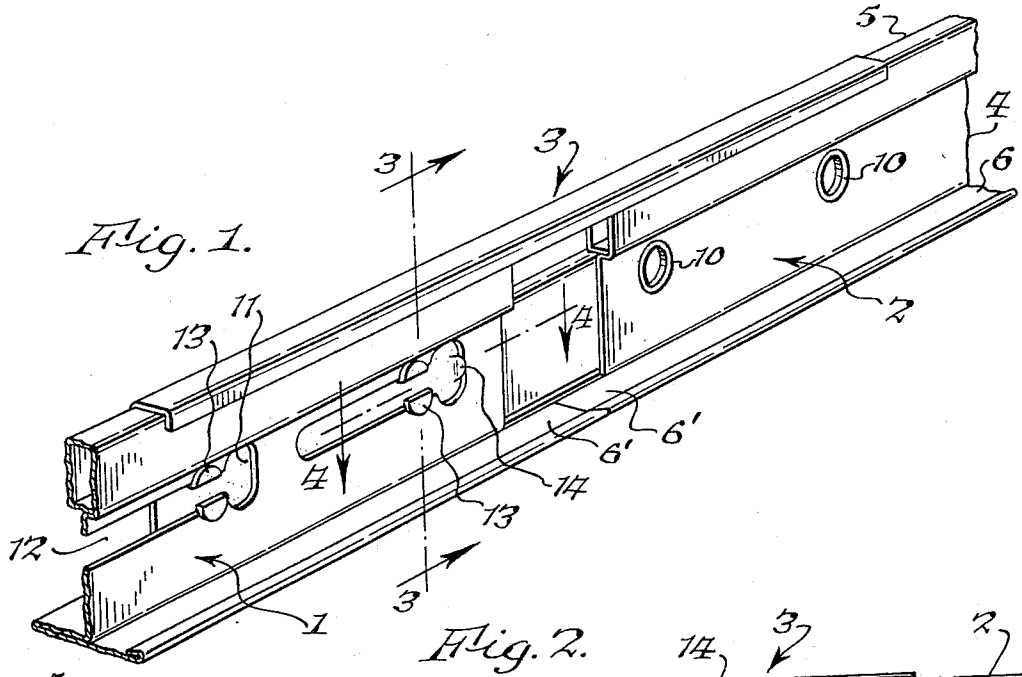


Fig. 2.

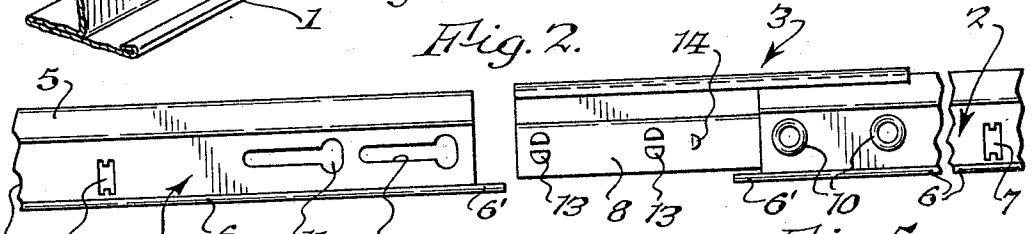


Fig. 4.

Fig. 5.

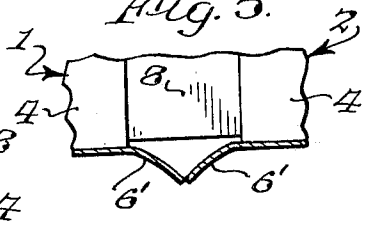


Fig. 3.

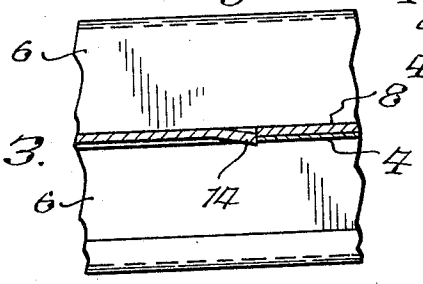
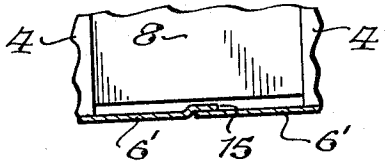
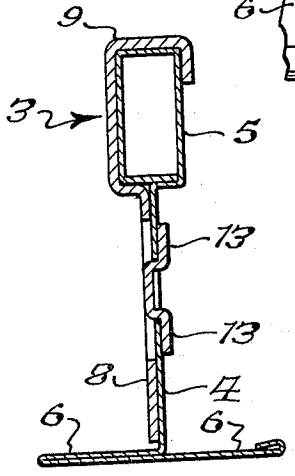


Fig. 6.





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3,284,977

EXPANSION SPLICE

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5 Claims. (Cl. 52—573)

This invention relates to a new and useful expansion splice for supporting grid systems and the like.

While not limited thereto, the present invention is particularly concerned with the provision of an expansion splice for tile supporting grid members of fire retarding ceilings. When subjected to extreme heat, such grid members seek to expand and will buckle if expansion cannot otherwise be accommodated. Buckling of the grid system is undesirable, because it tends to raise the tiles, or permit them to fall, or otherwise open the structure, thereby diminishing or destroying the fire retarding qualities of the ceiling by permitting heat to escape through the buckled area.

Expansion of the grid members can be accommodated by the provision of expansion joints. However, the strength and rigidity required by such systems also must be provided. Also, practical considerations call for a system which is relatively simple and which can be easily assembled without special tools.

A primary object of our invention is to provide an expansion splice for joining a pair of tile supporting grid members in end to end relation, providing a strong and rigid joint yieldable under abnormally elevated temperatures to accommodate relative expansion movement of the spliced members.

The foregoing and other objects, advantages and characterizing features of our invention will become readily apparent from the ensuing detailed description of an illustrative embodiment thereof, taken together with the accompanying drawing depicting the same, wherein like reference numerals denote like parts throughout the various views and wherein:

FIG. 1 is a perspective view of an assembled splice of our invention, the spliced beam members being broken away for ease of illustration;

FIG. 2 is a side elevational view thereof, on a reduced scale, prior to assembly of the splice;

FIG. 3 is a vertical sectional view thereof on an enlarged scale, taken about on line 3—3 of FIG. 1;

FIG. 4 is a fragmentary, horizontal sectional view thereof, taken about on line 4—4 of FIG. 1;

FIG. 5 is a fragmentary detailed view thereof, partly in side elevation and partly in section, showing the splice after expansion has occurred under abnormally elevated temperatures; and

FIG. 6 is a view similar to that of FIG. 5 but showing a slightly modified construction, prior to expansion.

Referring now in detail to the illustrative embodiment depicted in FIGS. 1–5 of the accompanying drawing, there is shown a pair of tile supporting beams generally designated 1 and 2, joined in end to end relation by a splice of our invention, the splice member being generally designated 3.

Beams 1 and 2 each are of generally inverted T form, having a normally upright web 4 surmounted by a laterally enlarged box sectioned reinforcing flange 5 along the upper margin of the web and having a flange 6 projecting laterally from opposite sides of the web at the lower margin thereof. The elements 4, 5 and 6 are conveniently fabricated from a single piece of metal, in a manner believed obvious from FIG. 1 and known in the art.

Each beam 1 and 2 has provision in the form of slots 7 through the web thereof at spaced points therealong

for receiving locking connectors of cross beams, not shown, which cross beams extend at right angles to the beams 1 and 2. In this way a supporting grid can be formed, as shown for example in our pending application Serial No. 359,588, filed April 14, 1964, for Expansion Joint for Supporting Grid Systems and the Like, to which reference is hereby made for further details.

Splice member 3 has a normally upstanding web 8 surmounted along its upper marginal edge by a partially open box sectioned head portion 9 designed for slip fit insertion of the beam marginal head 5 into the splice marginal head 9. When assembled in this manner, web 8 of splice 3 lies against webs 4 of beams 1 and 2, and the head 9 of splice 3 encloses the heads 5 of beams 1 and 2, in a manner reinforcing and stabilizing the assembled beams, holding them against lateral deflection. Splice member 3 also is fabricated from a single piece of metal.

In the specific embodiment disclosed herein, splice member 3 is secured in assembled relation to beam 2, as by rivets 10 struck through apertures in the web 4 of beam 2, from the web 8 of splice member 3. Splice member 3 projects lengthwise beyond beam 2, as a slightly offset continuation of the web and marginal head 5 thereof, for releasable interlocking engagement with beam 1.

Beam 1 has a pair of key slots comprising keyway openings 11 and elongated slots 12 of reduced height extending therefrom, in a direction away from the beam 2. Splice member 3 has a pair of keys 13 in the form of oppositely directed ears struck therefrom. When assembling beam 1 and splice member 3 it will be appreciated that one is canted slightly relative to the other, to permit insertion of the head 5 of beam 1 into the open sided head 9 of splice member 3, at a position in which keys 13 register with the key holes 11 in beam 1. Beam 1 then is slid lengthwise of splice member 3, toward beam 2, with keys 13 entering the narrow slots 12 and engaging on the side of web 4 opposite the side thereof against which the splice member web 8 engages.

It is a particular feature of our invention that movement of the beams 1 and 2 toward each other is limited by flanges 6 which project lengthwise of the beams beyond the webs 4 thereof, providing cantilevered, projecting flange ends 6′. These projecting flange ends abut, as clearly shown for example in FIG. 1, limiting the movement of beam 1 toward beam 2 in splice member 3. A lock tongue 14 is struck from the web 8 of splice member 3 at a position to enter one of the key holes 11 and engage behind the web 4 around the key hole, as clearly shown in FIG. 1. In this position, tongue 14 locks beam 1 against movement away from beam 2, and prevents its withdrawal from splice member 3. It will be appreciated that tongue 14 simply snaps into locking position as beam 1 is slid toward beam 2 in splice member 3.

Therefore, under normal conditions the projecting flange ends 6′ abut to prevent relative movement of beams 1 and 2 toward each other, while tongue 14 engages beam 1 to prevent relative movement of the beams away from each other.

This, together with the lateral and vertical reinforcement provided by splice member 3, produces a splice connection which is strong and rigid under normal use.

However, under abnormally elevated temperatures the cantilevered flange ends 6′ buckle, as shown in FIG. 5, permitting the beams 1 and 2 to move together, relatively speaking, thereby accommodating expansion movement thereof.

FIG. 6 shows a slightly modified form, in which one of the projecting flange ends 6′ is provided with an offset lip 15 overlapping the other projecting flange end 6′. Upon abnormally elevated temperatures the one flange end will ride over the other, permitting the beams to move

together, relatively speaking, thereby accommodating expansion of the beams.

It will be appreciated that the end of beam **1** not shown in the drawing can correspond to the illustrated end of beam **2** and carry a splice member **3** for engagement with another beam. In like manner, the end of beam **2** not shown in the drawing can correspond to the illustrated end of beam **1** for interlocking engagement with a splice member **3**. Alternately, the ends of the beams which are not shown can have other configurations.

Accordingly, it is seen that our invention fully accomplishes its intended purpose, providing an expansion splice which is readily assembled, and which can be disassembled if desired by simply depressing the tongue **14** out of locking engagement with the web **4** of beam **1**. While we have shown and described in detail only one embodiment, and a modification thereof, that has been done by way of illustration, without thought of limitation.

Having fully disclosed and completely described our invention, and its mode of operation, what we claim as new is:

1. An expansion splice for supporting grid systems and the like comprising a pair of beams alined in abutting end to end relation and each having a web and a lateral flange, said webs being recessed longitudinally of said beams relative to said flanges at the abutting ends of said beams to provide an expansion joint between said beam ends, and a splice member spanning said joint, said splice member having interlocking engagement with said web of one of said beams on one side only of said joint and having interlocking engagement with said web of the other of said beams on the other side only of said joint, the interlock between said splice member and one of said beams enabling relative expansion movement of said beams toward one another, said flanges abutting at said ends to prevent such expansion movement under normal temperature conditions while yielding at said ends to permit such movement under elevated temperature conditions.

2. An expansion splice as set forth in claim **1**, wherein said splice member is secured to one of said beams in fixed relation thereto, and wherein said splice member has a sliding interlock with the other of said beams, said sliding interlock enabling said relative expansion movement of said beams.

3. An expansion splice as set forth in claim **1**, wherein said interlock enabling said relative expansion movement of said beams is provided by a key slot in said web of one of said beams, and a key carried by said splice member for sliding engagement in said key slot, together with a yieldable detent carried by said splice member and engaging in said key slot, said detent preventing relative movement of said beams away from one another.

4. An expansion splice as set forth in claim **1**, wherein said flanges are along one marginal edge of said webs and said webs have laterally enlarged bead formations along the opposite marginal edges thereof, said bead formations also being recessed longitudinally of said beams relative to said flanges at said abutting ends of said beams, said splice member comprising a web generally corresponding to said beam webs and an open bead formation along one marginal edge of said splice member web receiving said beam bead formations and engaging the same on opposite sides thereof.

5. An expansion splice as set forth in claim **1**, where one of said abutting flanges has an offset lip overlapping the other thereof.

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