

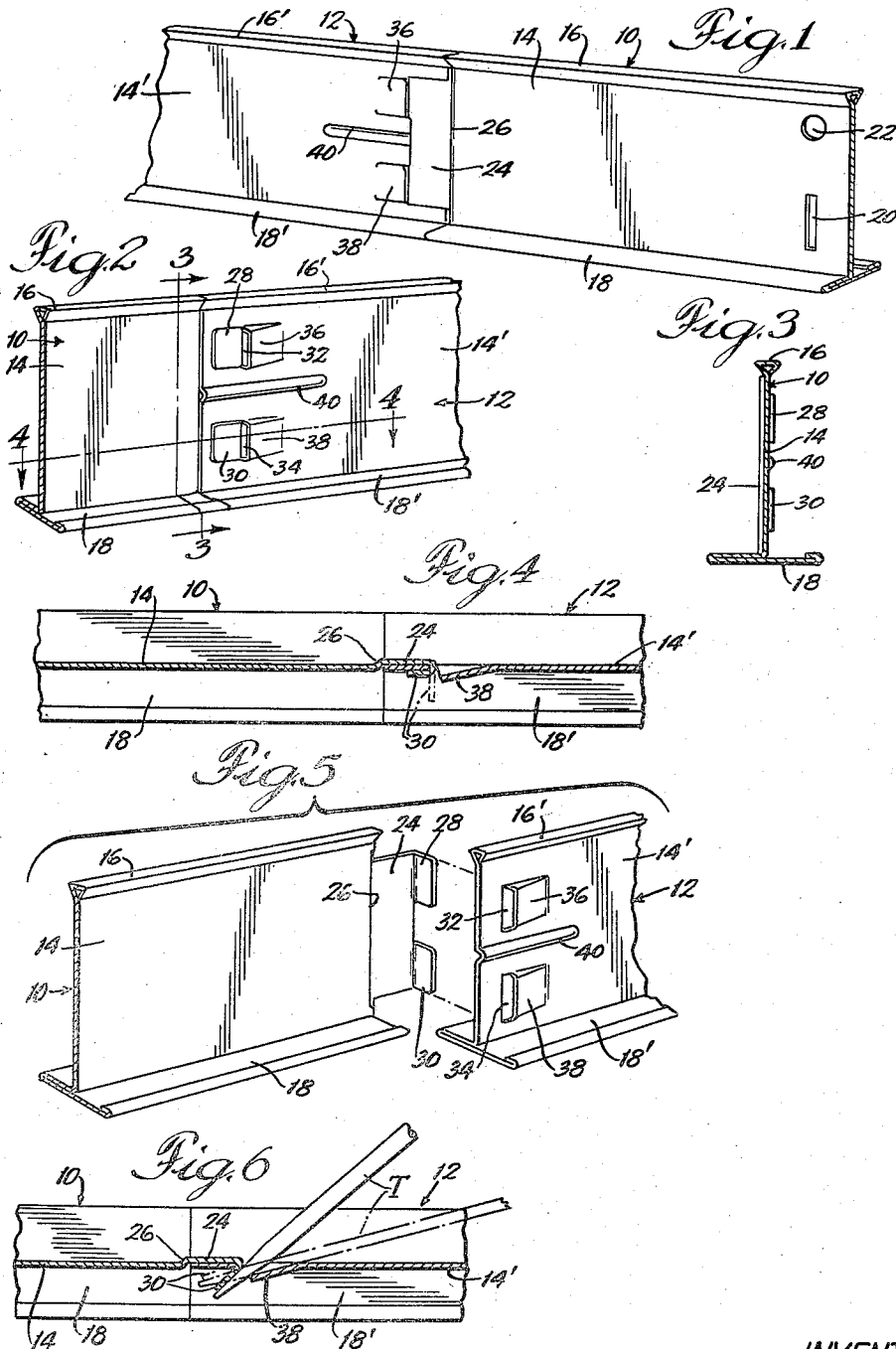
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T-SPLICE

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1

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T-SPLICE

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This invention relates generally to an assembly of interconnected structural members, and more particularly to a rigid and linearly aligned coupling of structural members having a generally T shaped cross section.

In structural systems of the type employed in the building and related construction fields, a rigid interlocking grid of cooperating T members is a convenient and desirable arrangement. For example, suspended ceilings of the type comprising main T's installed on predetermined centers and supported by wire hangers or the like, and cooperatively interconnected by a plurality of cross T's also installed on predetermined centers, serve as a convenient and serviceable system for supporting modules or panels such as acoustical units, lighting fixtures, and like ceiling elements.

The present invention is directed to a novel coupling means for interconnecting main T runners in end-to-end and linearly aligned rigid assembly.

It is a primary object of this invention to provide a pair of main T runners having particularly formed male and female coupling elements adapted to permit simple and rigid interconnection of the members in accurate linear alignment.

It is another object of this invention to provide cooperating coupling elements including a particularly formed tab adapted to be received through the narrow slot of a web and bent back in reverse parallel relation against the web, the various parts being particularly formed and offset to facilitate tab insertion and bending in a manner which insures rigid coupling and linear alignment of the members.

Further objects and advantages of this invention will become apparent as the following description proceeds, and the features of novelty which characterize this invention will be pointed out with particularity in the claims annexed to and forming part of this specification.

A preferred embodiment of the invention is shown in the accompanying drawing, in which:

Figure 1 is a perspective view showing a pair of main T runners embodying the features of the present invention and disposed in end-to-end interconnection;

Figure 2 is another perspective view viewing the coupled members of Figure 1 from the opposite side;

Figure 3 is a vertical cross sectional view taken substantially as indicated by the line 3—3 on Figure 2;

Figure 4 is a horizontal cross-sectional view taken substantially as indicated by the line 4—4 on Figure 2;

Figure 5 is a perspective view showing the coupling ends of the members in separated relation prior to interconnection assembly; and

Figure 6 is a horizontal cross-sectional view similar to Figure 4, illustrating the manner in which a tool may be employed to effect rigid coupling of the members.

Referring now to the drawing, I have designated generally at 10 and 12 a pair of structural members or main T runners of the type adapted to be coupled in end-to-end relation for the construction of a rigid interlocking grid assembly. Each of the main T runners are of sub-

2

stantially identical form, and are particularly constructed to provide a male coupling means at one end and a female coupling means at the other end. As illustrated, the cooperative relation between the male coupling portion of runner 10 and the female coupling portion of runner 12 will be described. Identical structural features of each of the runners will be designated by the same numerals with a prime added as applied to runner 12.

The runner 10 is preferably of the type formed from a single sheet of metal particularly folded and shaped to define an upstanding central web 14 terminating in a top rib 16 and a horizontal bottom flange 18. The top rib 16 lends rigidity and reinforcement strength to the runner. The horizontal bottom flange 18 extends transversely at each side of the web 14 and generally at right angles to the plane thereof for supporting modular units such as panels or the like. In this way, the cross sectional shape of the runner assumes the form of a T. A vertical slot 20 may be provided intermediate the length of the runner for reception of cross T members in a rigid and interlocking T joint. Such a T joint is disclosed in my copending application Serial No. 629,599, filed December 20, 1956. An aperture 22 may be provided for passage and support of hanger wire elements and the like.

The improvement features of the present invention relate to the coupling elements for effecting a splice or interconnection of the runners 10 and 12. The male coupling elements are provided by a connector flange 24 which extends forwardly of the main web 14 and is of substantially shorter vertical height than the distance top rib 16 and bottom flange 18. A lateral offset 26, substantially equal in thickness to the sheet metal forming the web 14, serves to position the flange 24 in laterally displaced parallel relation to the plane of the web 14. The forward terminal end of the connector flange 24 is formed with a pair of coupling prongs or tabs 28 and 30, which are spaced one above the other and disposed at right angles to the planes of the web 14 and flange 24.

The female coupling end of the runner 12 is formed with a pair of vertical coupling slots 32 and 34. The coupling slots 32 and 34 are of relatively narrow width, slightly greater than the thickness of the sheet metal forming the web 14', and are slightly greater in vertical height than the corresponding height of the coupling tabs 28 and 30. The slots 32 and 34 are disposed in selected positions of vertical alignment in the web 14' of runner 12 corresponding to the positions of the coupling tabs 28 and 30 relative to the web 14 of runner 10. In this way, insertion of the tabs into the slots will serve to orient the T-shape ends of the runners 10 and 12 in vertical alignment.

The portions of the web 14' rearwardly of the slots 32 and 34 are outwardly embossed at the side opposite to that adapted for receptive entry of the tabs 28 and 30. These embossments provide generally wedge shaped guides 36 and 38 which effect a substantial enlargement of the transverse width of the coupling slots 32 and 34. A longitudinal reinforcement rib 40 is embossed in the web 14' between the guides 36 and 38 to insure structural rigidity of the female coupling end of the runner 12.

In practical use, a first main T runner will be fixedly mounted in generally horizontally extending relation from a side wall or similar fixed mounting means. In order to span a substantial extent of area away from the fixed point of mounting, additional main T runners must be rigidly coupled to the first runner in linear alignment therewith. The first runner, as exemplified by runner 12 of the drawing, is mounted with its female coupling portion exposed at the outermost or free end thereof. The second main T runner, as exemplified by runner 10 of the drawing, may then be interconnected to the first main T runner by inserting the tabs 28 and 30 of its male

coupling end transversely through the coupling slots 32 and 34 of the female coupling end of the first main T runner.

As indicated in Figure 4 of the drawing by dotted line, the tabs will extend through the slots at right angles to the planes of the respective webs 14 and 14' of the two runners 10 and 12. Because of the lateral offset 26, complete end-to-end mating of the two runners may be effected, with their respective webs lying in a single vertical plane and their respective bottom flanges lying in a single horizontal plane, thereby enabling accurate linear alignment of the two runners.

In order to complete rigidly coupling assembly of the aligned and abutting main T runners 10 and 12, it is merely necessary to bend the tab 28 and 30 back against the web 14' into generally parallel alignment with planes of the connector flange 24 and the aligned runner webs. The tabs have been shown bent back to complete a rigid assembly of the main T runners in Figures 2-4 of the drawing. This bending of the tabs may be readily and simply effected by the use of a small screw driver or the like. The screw driver may simply be inserted in the wedge shaped guides 36 and 38 and engaged against the corresponding tabs 28 and 30.

The particular shape of the guides 36 and 38 serves both to steady and position the screw driver while at the same time enabling engagement thereof against the tab at a point spaced from the plane of the web 14' against which it is to be bent. In this way, both guiding and leverage may be achieved so that the tabs are readily bent back against the web 14' or runner 12 as the screw driver is driven forwardly toward the web 14 of runner 10.

In Figure 6 of the drawing I have indicated at T a screw driver effecting backward bending of the tab 28 to complete coupling assembly of the runners in the manner described. As shown in solid lines, the screw driver may be arcuately swung or otherwise manipulated so as to insure complete bending of the tab 28 against the web 14'. Alternatively, and as indicated by a dotted line showing in Figure 6, the screw driver may simply be aligned flat against the guide 38 and driven sharply forwardly, as by striking with a hammer. In this way, the tabs may be readily bent to complete automatically an accurately aligned coupling interconnection of the runners 10 and 12 in mating end-to-end abutment, without any need for visual alignment of the runners and with a minimum of manipulation by the assembler.

While there has been shown and described a particular embodiment of this invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention and, therefore, it is intended in the appended claims to cover all such changes and modifications as fall within the true spirit and scope of the invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A structural member adapted to be coupled together with another identical member in end-to-end longitudinal alignment, said member having an upstanding central web of single integral thickness terminating in a horizontal bottom flange and defining a generally T-shape cross section, said member having male coupling means at its one end and female coupling means at its other end, said male coupling means including a connector flange projecting forwardly of the web and laterally offset in a plane parallel to the plane of said web a distance substantially equal to the thickness of said web,

said connector flange having a bendable tab extending at right angles therefrom, said female coupling means including a narrow slot in parallel orientation with said coupling tab, and said web having a wedge shaped embossment of progressively increasing lateral depth toward said coupling slot for effecting lateral enlargement thereof, whereby upon insertion and longitudinal bending of the coupling tab of the male end of one of said members through the coupling slot of the female end of another of said members continuous longitudinal alignment of the central webs and bottom flanges thereof is effected.

2. A structural member adapted to be coupled together with another identical member in end-to-end longitudinal alignment, said member having an upstanding central web of single integral thickness terminating in a horizontal bottom flange and defining a generally T-shape cross section, said member having male coupling means at its one end and female coupling means at its other end, said male coupling means including a reduced-height connector flange projecting forwardly of the web and laterally offset in a plane parallel to the plane of said web a distance substantially equal to the thickness of said web, said connector flange having a pair of vertically spaced bendable tabs extending at right angles therefrom, said female coupling means including a pair of narrow slots in parallel orientation with said coupling tabs, and said web having a pair of wedge shaped embossments of progressively increasing lateral depth toward each of said coupling slots for effecting lateral enlargements thereof, whereby upon insertion and longitudinal bending of the coupling tabs of the male end of one of said members through the coupling slots of the female end of another of said members continuous longitudinal alignment of the central webs and bottom flanges thereof is effected.

3. A pair of structural members coupled together in end-to-end longitudinal alignment, each of said members having an upstanding central web of single integral thickness terminating in a horizontal bottom flange and defining a generally T-shape cross section, one of said members having male coupling means at one end thereof and the other of said members having female coupling means at one end thereof, said male coupling means including a connector flange projecting forwardly of the web and laterally offset in a plane parallel to the plane of said web a distance substantially equal to the thickness of said web, said connector flange having a bendable tab initially extending integrally at right angles therefrom, said female coupling means including a narrow slot in parallel orientation with said coupling tab and receiving said tab therethrough when said members are in mated end-to-end abutment, the web of said other of said members having a wedge shaped embossment of progressively increasing lateral depth toward said coupling slot for effecting lateral enlargement thereof, and said tab being bent back substantially parallel to and against the said web forwardly of said embossment, whereby continuous longitudinal alignment of the central webs and bottom flanges of said coupled members is effected.

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