May 26, 1931. L. B. MOLTZAN 1,806,639

TRUSS

Filed Dec. 13, 1929

Fig. 1.

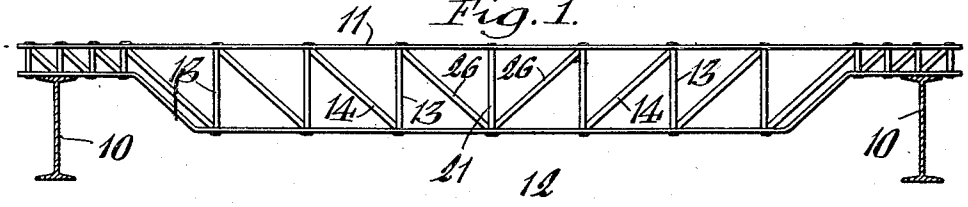


Fig. 2.

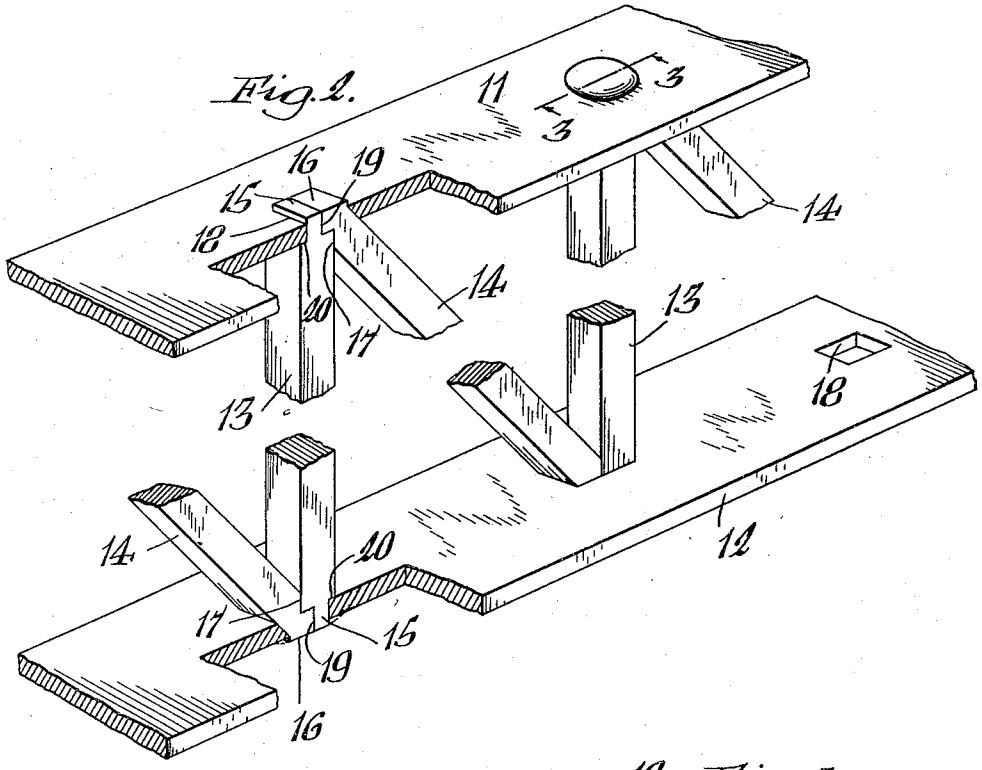


Fig. 3.

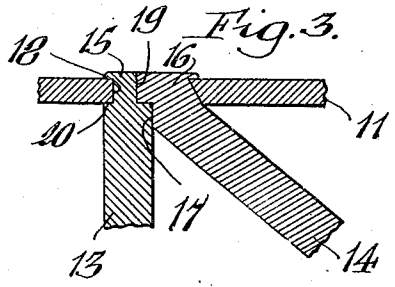
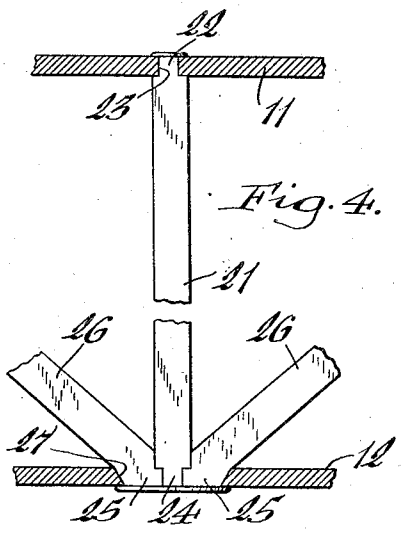


Fig. 4.



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Patented May 26, 1931 1,806,639

UNITED STATES PATENT OFFICE

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TRUSS

Application filed December 13, 1929. Serial No. 413,723.

This invention relates to new and useful improvements in building trusses or girders.

It has for its chief object to provide a building truss which is simple and inexpensive, yet strong and durable in construction, and which is designed for ready fabrication at a minimum expenditure of time and labor.

Another object of the invention is the provision of a truss of this character whose various members are positively and firmly joined together without welding and without the use of separate fastenings, the intermediate members of the truss being constructed for interlocking engagement with one another and with the top and bottom members thereof to effectively tie the whole as a complete structural unit.

In the accompanying drawings:—

Figure 1 is a side elevation of a building truss embodying my invention. Figure 2 is an enlarged, fragmentary perspective view of the truss, partly in section. Figure 3 is a fragmentary longitudinal section taken in the plane of line 3—3, Figure 2. Figure 4 is a fragmentary longitudinal section showing the arrangement of the center members of the truss.

Similar characters of reference indicate corresponding parts throughout the several views.

In the example shown in the drawings, the improved truss is of the type used in buildings and is supported at its ends on beams 10, the truss consisting of horizontal top and bottom members or plates 11, 12 and intermediate web members or brace bars 13, 14 interposed between said top and bottom members and securely fastened thereto. While the top and bottom members are shown in the form of flat plates, they may be in the form of channel plates or any other well known type of structural steel formation.

The bars 13 are preferably disposed substantially vertically between the plates 11, 12 at equi-distant intervals and terminate at their upper and lower ends in attaching shanks or tenons 15, while the bars 14 are disposed diagonally between the bars 13 and are provided at their ends with offset attaching shanks or substantially hook-shaped tenons 16 facing in a direction toward the corresponding tenons of the last-named bars and preferably formed by notching each bar 14, as indicated at 17.

The tenoned ends of the adjoining bars 13, 14 are adapted to overlap or abut against each other in the direction of length of the top and bottom members 11, 12 and to conjointly engage corresponding openings 18 therein. Said bars are preferably square in cross section and the openings in the top and bottom members are rectangular in shape to jointly receive the tenoned ends of the bars in the manner shown at the left in Figure 2 and in Figure 3. The tenons are of a length to protrude slightly through the plate-openings 18 and after the companion members 13, 14 are set in place between the top and bottom plates, their protruded ends are upset or headed or otherwise anchored to the plates, as shown in Figure 3, to firmly join the parts to one another. As shown in Figure 3, one of the end walls of each opening 18 may be beveled to draw or wedge the tenoned ends of companion bars toward each other, thereby insuring a tight, rigid connection of the parts, with the tenon 16 of the bar 14 engaging the opposing notch 19 resulting from the tenon 15 of the bar 13 and the shoulder 20 formed at the opposite side of said tenon 15 abutting against the opposing face of the adjoining plate 11 or 12. By this construction, the brace members 13, 14 constitute their own fastening means, eliminating separate fasteners and the time and labor required for installing them, and the interlocking of the parts is such that they brace one another, resulting in the load or strain being uniformly distributed throughout the overall length of the truss.

The upright center bar 21 is preferably mounted in the manner shown in Figure 4. Its tenoned upper end 22 is fitted in a correspondingly shaped opening 23 in the top plate 11, while its tenoned lower end 24 is fitted between the opposing tenoned ends 25 of adjoining brace bars 26, the tenoned ends 24, 25 jointly engaging an opening 27 in the bottom plate 12 of the proper size and shape

to receive them and their protruding portions being upset to produce a unitary head for securely fastening the bars in place. In this case, both ends of the plate-opening 27 are beveled or converge downwardly to snugly draw the diagonal brace bars 26 about the tenoned lower end of the upright bar 21.

While the bars 13 have been shown in a substantially upright position, it is to be understood that they may be disposed at an angle to the vertical, depending on the use to which the truss is to be put, without departing from the spirit and scope of the invention as defined by the appended claims, wherein said bars have been designated as "upright members" or "uprights".

I claim as my invention:—

1. A building truss, comprising top and bottom members having openings therein, upright members disposed between said top and bottom members, and diagonal members extending from one upright member to an adjoining one, the ends of said upright members and said diagonal members terminating in attaching shanks jointly engaging the corresponding openings in said top and bottom members and upset at their outer ends against the latter.

2. A building truss, comprising top and bottom members having openings therein, upright members disposed between said top and bottom members, and diagonal members extending from one upright member to an adjoining one, the ends of said upright members and said diagonal members terminating in tenons extending jointly through the corresponding openings in said top and bottom members and interlocked with each other in said openings.

3. A building truss, comprising top and bottom members having openings therein. upright members disposed between said top and bottom members and terminating at their ends in tenons, and diagonal members extending from one upright member to an adjoining one and terminating at their ends in tenons overlapping the companion tenons of adjoining upright members, the overlapping tenons of adjoining upright and diagonal members jointly extending through common openings in said top and bottom members and having their exposed ends upset against the latter.

4. A building truss, comprising top and bottom members having openings therein, upright members disposed between said top and bottom members and terminating at their ends in tenons, and diagonal members extending from one upright member to an adjoining one and terminating at their ends in substantially hook-shaped tenons overlapping and interlocking with those of the upright members, the tenons of adjoining upright and diagonal members extending jointly through common openings in said top and bottom members, the inner ends of said tenons abutting against one side of said last-named members and their exposed ends being upset against the opposite side thereof.

5. A building truss, comprising top and bottom members having openings therein, upright bars disposed between said members and terminating at their ends in tenons, and diagonal bars extending from one upright bar to an adjoining one and terminating at their ends in tenons adapted to engage the tenons of said upright bars in overlapping relation, the overlapping tenons of adjoining upright and diagonal bars jointly engaging corresponding openings in said top and bottom bars, said tenons protruding through said openings and being jointly upset against the opposing sides of the top and bottom members.

6. A building truss, comprising top and bottom members having openings therein, upright bars disposed between said members and terminating at their ends in tenons engageable with said openings, said tenons forming resulting shoulders on either side thereof, one of which is adapted to bear against the adjoining top or bottom member, and diagonal bars extending from one upright bar to an adjoining one and terminating at their ends in tenons extending through said member-openings in juxtaposition to the tenons of said upright bars, each of the tenons of the diagonal bars having a part engaging one of the shoulders formed by the tenons of the adjoining upright bar, the tenons of adjoining bars extending through the same opening and having their ends upset against the top and bottom members, respectively.

7. In a building truss, spaced uprights terminating at their ends in tenons, diagonal brace members extending from the lower end of one upright to the upper end of an adjoining upright and terminating at their ends in tenons, and top and bottom horizontal members having means for jointly receiving the tenoned ends of adjoining uprights and brace members.

8. A building truss, comprising top and bottom members having openings therein, and web members interposed between said top and bottom members with their opposite ends in sidewise abutting engagement with the corresponding ends of adjoining web members the abutting ends of adjoining web members extending jointly through the corresponding openings in said top and bottom members and anchored thereto.

9. A building truss, comprising top and bottom members having openings therein, and a plurality of web members disposed between said top and bottom members and arranged to intersect one another at their

ends, such ends of the web members terminating in tenon-like elements, the elements of adjoining web members abutting and interlocking with each other in the direction of length of said top and bottom members and cojointly engaging the corresponding openings in said last-named members.

LOUIS B. MOLTZAN.