Nov. 21, 1933. W. F. ZABRISKIE 1,935,758

TRUSS

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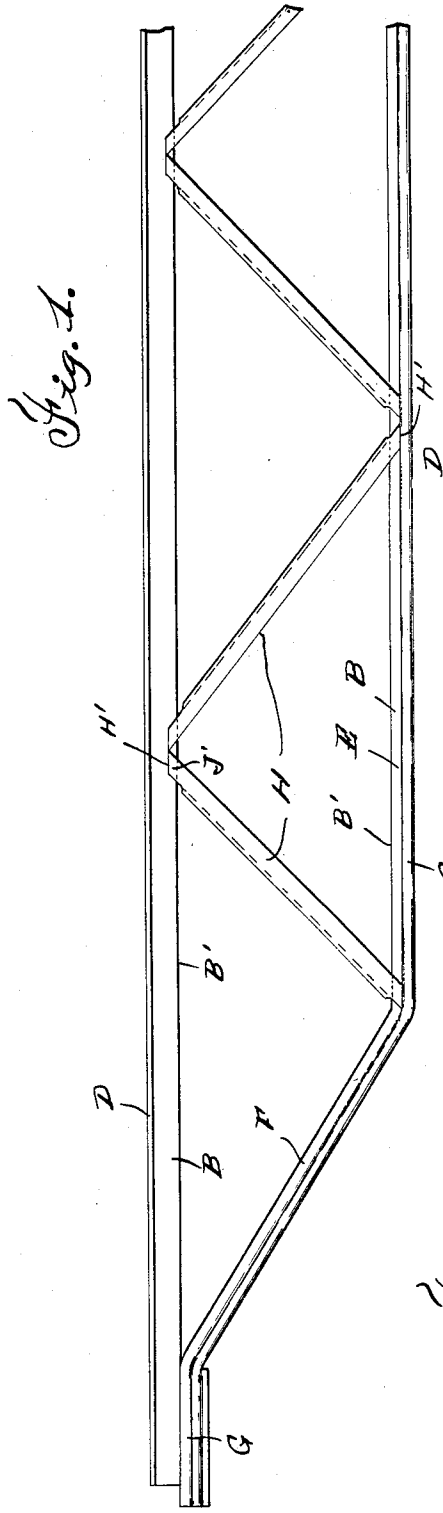


Fig. 1.

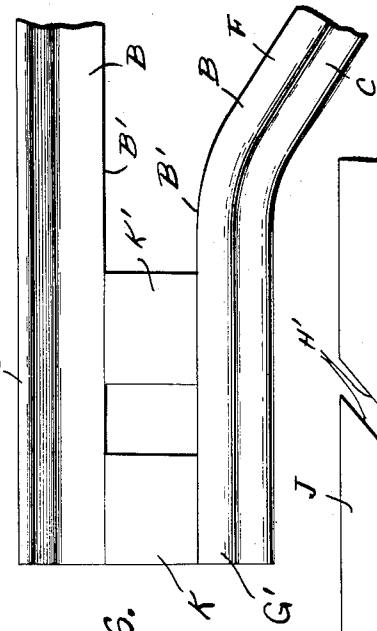


Fig. 6.

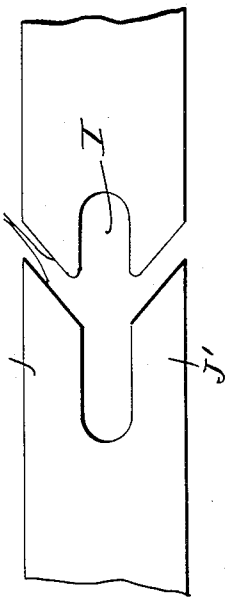


Fig. 3.

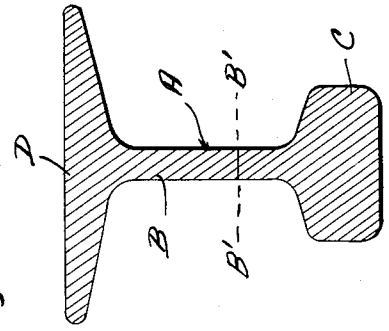


Fig. 5.

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TRUSS

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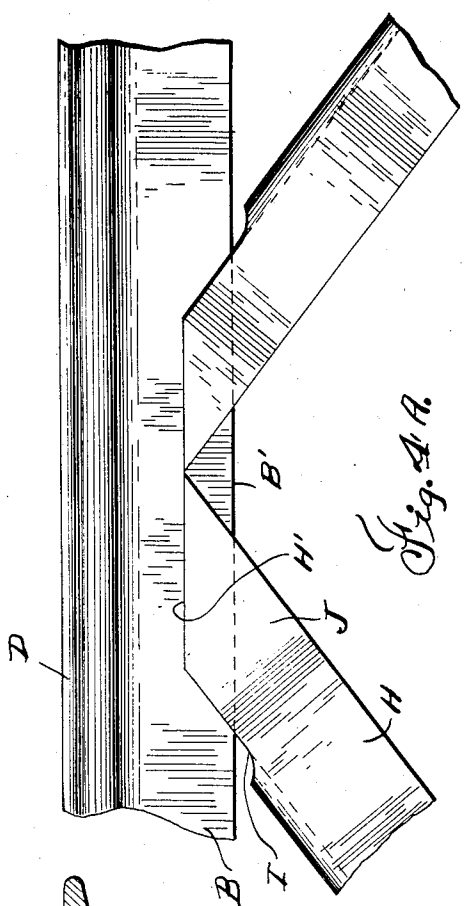


Fig. 4 A.

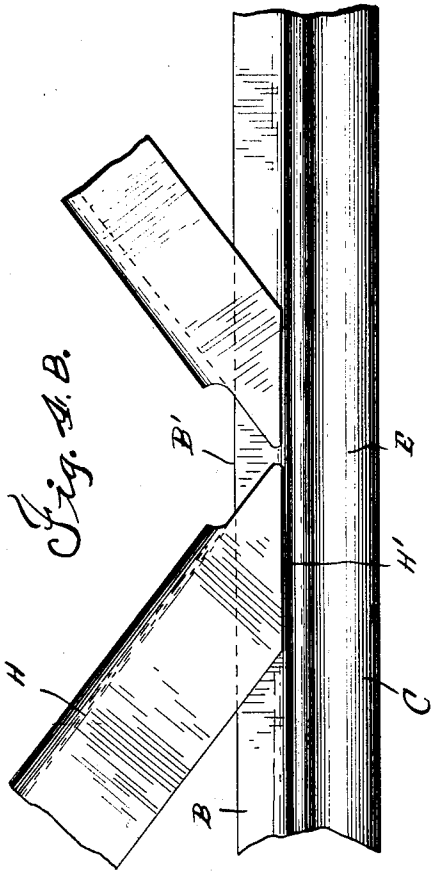


Fig. 4 B.

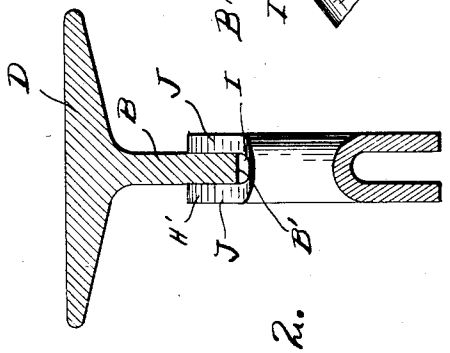
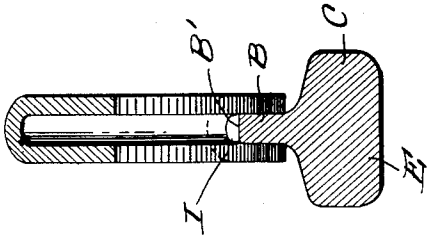


Fig. 2.



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UNITED STATES PATENT OFFICE

1,935,758

TRUSS

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Application March 27, 1929. Serial No. 350,375

5 Claims. (Cl. 189—37)

The invention relates to trusses such as are fabricated for use in building construction and similar purposes, and the invention consists in the structure and method of forming the same as hereinafter set forth.

In the present state of the art it is usual to fabricate trusses of this character from various standard or special structural shapes or bars forming upper and lower cord members and connecting webbing. In designing the truss the upper or compression cord member should be of a somewhat greater cross-section than the lower or tension cord member, as for instance the ratio of 18 to 15. If standard sections are used, it is sometimes difficult to find shapes or bars which are of the proper proportion and consequently more metal is used than required. Furthermore, selection from standard shapes frequently requires the use of members in which the metal is not as advantageously distributed as if designed especially for the truss.

It is the primary object of my invention to simplify the method of manufacture, lessen the cost and to obtain a better proportion between the upper and lower cord members of the truss by producing the same from an integral rolled structural shape severed into two separate members. The severing may be accomplished by shearing the web portion of this structural member and locating the line of shear so as to properly proportion the upper and lower members in cross sectional area. The structural shape which I preferably employ for floor joists or light roof trusses is a rail member which permits of using the head portion having the more concentrated cross section for the tension cord member and the base portion with the more extended flanges as the compression cord member.

A further feature of my invention is in the construction of webbing for connecting the upper and lower cord members. This I preferably form from flat bars which are cut to proper length and then bent into a U-shaped section, the parallel sides of which are properly spaced to embrace the web portions of the cord members. The web members thus formed may be arranged to extend vertically or diagonally between the upper and lower cord members being attached thereto by welding or riveting to the web portions.

While my invention is applicable to various uses, I have specifically shown in the drawings a construction designed as a metallic joist and in which

Figure 1 is a side elevation of a portion of a truss of my improved construction;

Figure 2 is a cross section therethrough;

Figure 3 is a plan view showing the preferable manner of severing the bars from which the web members are formed;

Figures 4A and 4B are enlarged views of portions of Figure 1 illustrating the manner of attaching the web members to the cord members;

Figure 5 is a cross section through the rail or structural shape from which the cord members are formed;

Figure 6 is an elevation showing a modified construction of the end portion of the truss.

In designing the truss as for a joint, I first select from standard structural members or rails such as A one which has a cross section equal to the combined cross sectional areas needed for the upper and lower cord members. This may be obtained at a cost considerably less than that for specially rolled structural shapes. The web portion B of the rail is then severed throughout its length on the line B'—B' which is so located as to obtain the desired proportion between the head portion C and the base portion D used respectively for the tension and compression cord members. Thus for certain constructions it is desirable to have the cross sectional areas of the compression and tension members in the ratio of 18 to 15 and this may be obtained by properly locating the line of severance B'—B'. After severing the rail the two portions are cut the proper length, the portion C being sufficiently longer than the portion D so as to form the lower cord proper E and end diagonals F. The latter are bent so as to extend up at the desired angle to the upper cord member D, being also provided with portions G parallel to the member D so that the web portions thereof may be reunited.

It is sometimes desirable to form the end portions of the truss with a depth of web in excess of the depth of web in the original bar. In such a case I preferably use the construction shown in Figure 6 in which the portion G' which is parallel to the upper cord member is spaced therefrom by inserts K and K'. These are preferably formed of plates of a thickness corresponding to the web portions of the cord members and are welded or otherwise secured thereto. I preferably leave a space between these plates which facilitates anchorage to the masonry or supporting steel.

The web members H of the truss are preferably formed from flat bars which may be ob-

tained in coils of considerable length and severed into sections of the desired length. In severing these sections they are sheared on a V-shaped line H' and are also cut away longitudinally at the center of the bar as indicated at I so as to form furcations J, J'. The separate sections are then bent into U-shaped form which arranged the furcations J and J' in parallelism and properly spaced from each other to embrace the web portions B of the upper or lower cord members to which they are united, preferably by welding.

A truss of the construction above described can not only be manufactured at less cost but has many advantages over the other constructions. In particular, the accurate proportioning of the upper and lower cord members to each other by the location of the line of severance is a most important advantage. Another advantage is in obtaining the concentrated cross section for the lower or tension cord member and in the case of floor joists this is particularly desirable, for it simplifies the attachment of the metallic lath for forming the ceiling. Thus it is usual to attach a lath by loops of wire, each of which is inserted through an opening in the lath around the lower cord member and is then drawn downward through another opening in the lath and secured. It is obvious that this operation can be performed more easily if the lower cord member is of a concentrated section than where formed of a flange member. Also less wire is required for each attachment loop. The forming of the web diagonals of separate members has the advantage that it permits of proportioning these according to the stresses to which they are subjected, thereby saving in weight.

What I claim as my invention is:

1. A truss comprising upper and lower cord members formed respectively of the base portion and the head portion of a standard rail severed from each other along a predetermined straight line in the web portion of the rail and webbing connecting said cord members formed of bars of U-shaped cross section having bifurcated end portions embracing the web portion of said cord members and rigidly secured thereto.

2. A truss comprising upper and lower chord members formed respectively of the inverted base portion and head portion of a standard rail severed along a predetermined line in the web portion thereof, and spaced from each other, and webbing connecting said members.

3. A truss comprising upper and lower chord members formed respectively of the inverted base portion and head portion of a standard rail severed along a predetermined line in the web portion thereof and spaced from each other, and diagonal webbing connecting the web portions of said members.

4. A truss comprising upper and lower chord members formed respectively of the inverted base portion and head portion of a standard rail severed along a predetermined line in the web portion thereof and spaced from each other in the central portion longitudinally thereof but reunited at their end portions, and webbing connecting said spaced central portions.

5. A truss comprising upper and lower chord members formed respectively of the inverted base portion and head portion of a standard rail severed along a predetermined line in the web portion thereof, the central portions longitudinally of said members being spaced from each other and the end portions of the lower chord member being bent into proximity to the end portions of the upper chord member, inserts between said chord members at the ends thereof to increase the depth of the web, and webbing between the spaced central portions of said chord members.

WILLIAM F. ZABRISKIE.