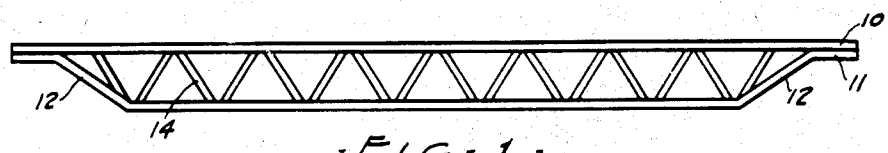
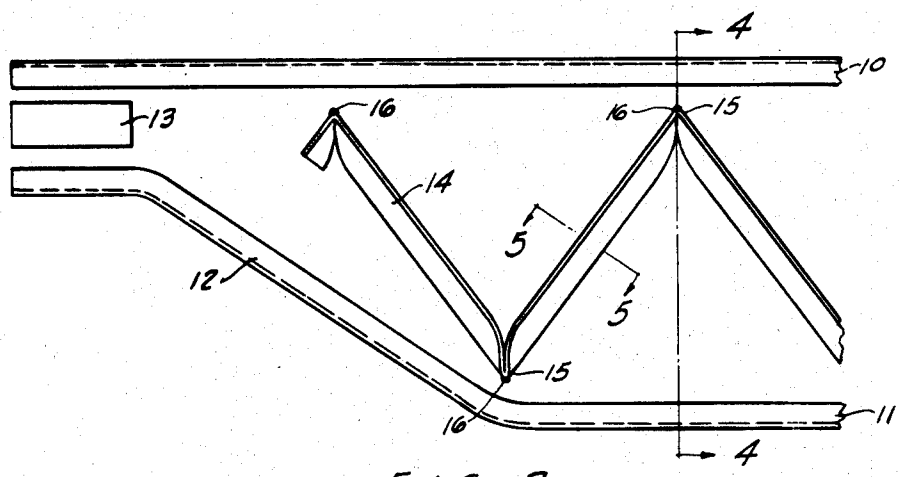
Jan. 12, 1943. R. F. HERR 2,308,080

JOIST

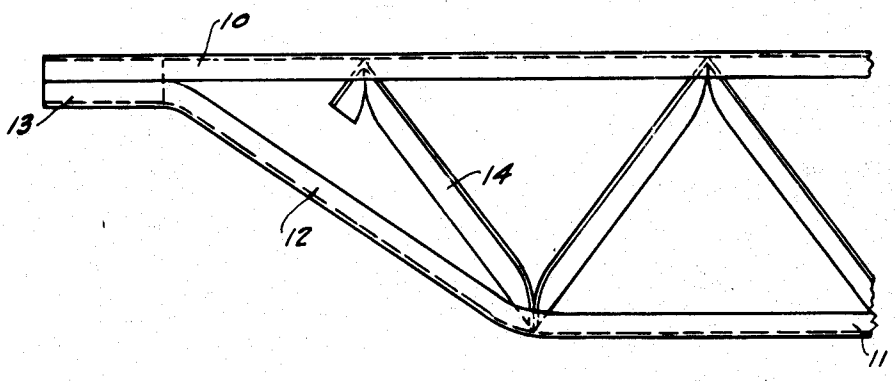
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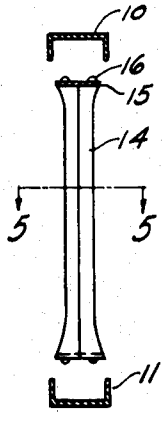
-FIG-1-



-FIG-2-



-FIG-3-



-FIG-4-



-FIG-5-

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UNITED STATES PATENT OFFICE

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JOIST

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Application January 7, 1941, Serial No. 373,441

5 Claims. (Cl. 189—37)

This invention relates to a unit of building construction and more particularly a joist.

The principal object of the invention is to provide a joist formed of metal and particularly of sheet or strip metal.

A further object of the invention is to provide a joist formed of strip metal and of lighter weight than metal joists heretofore known to the art.

A still further object of the invention is the provision of a joist formed of strip metal and having the appearance of a heavy, strong, and sturdy unit as compared with various other metal joists known to the art.

A still further object of the invention is the provision of a joist formed of strip metal the construction of the web portion of which follows accurately the lines of stress of the joist rather than only approximately so, as common to metal joists heretofore known to the art.

The joist shown and described herein in accordance with the invention comprises a construction of longitudinally extending spaced metal members preferably of channel cross section connected together at their ends to form an anchorage and transversely connected therebetween by a web member so as to form a Warren truss, and assembled from suitably shaped metal strip into an integrally continuous member. The transversely connecting web member being formed of V shaped strip material bent at a sharp angle and welded at the points of contact with the longitudinally extending chord members.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, can be made within the scope of what is claimed without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawing, wherein:

Figure 1 is a side elevation of the joist.

Figure 2 is a side elevation on an enlarged scale of several component parts of the joist showing the parts as fabricated and before assembly of the same.

Figure 3 is a side elevation showing the same parts in assembled relation.

Figure 4 is a sectional elevation taken on lines 4—4 of Figure 2.

Figure 5 is a cross sectional elevation taken on lines 5—5 of Figure 2.

By referring to the drawing and Figures 1, 2, and 3 in particular it will be seen that the joist comprises a pair of longitudinally extending spaced metal chord members preferably of channel cross section 10 and 11 respectively, the chord 11 being formed of upturned end sections 12 which terminate adjacent to and beneath the end sections of the chord 10 and are adapted to be affixed thereto by means of connector sections 13 positioned within the opposed channels 10 and 11. The chords 10 and 11 comprising channel shapes preferably in opposed relation, are transversely connected throughout their parallel length by means of a web member 14 made of strip material of an angle shape in transverse cross section, the apex of the angle lying in a central vertical plane, and being bent in a sharp angle 15 at each point of contact with the channel members 10 and 11, without cutting any material so that substantial single line contacts are formed with the surfaces of the upper and lower chords and provided with projections 16 through which the transversely connecting web member 14 is affixed to the chords 10 and 11 by a welding operation. When the welding operation has taken place the joist resulting is in the form illustrated in Figure 3 of the drawing. The transversely positioned connecting web member 14 becomes a structural part of the joist, with the transversely connecting members 14 accurately following the lines of stress of the structural assembly. This is made possible by the formation of the transversely connecting web member 14 from strip material which, due to its thinness, can be bent in a sharp angle without cutting any material as indicated by the numeral 15 much better than a round or thicker shape of metal and therefore permits the web member so formed to follow the actual lines of stress. It will thus be seen that a joist may be formed of strip material which material is advantageously carried in stock in coils, a wide strip of which may be readily slit to proper size and subsequently formed in the channel shapes or V shapes necessary thus making readily available a material supply for various sizes of joists as it has been determined that two widths of strip of varying gauges are satisfactory for the formation of the various sizes of joists commonly in demand. The formation of this joist from strip material thus makes unnecessary the stocking of adequate supplies of bars from which other joists known to the art are formed with a result in savings in material storage as well as the simplified formation of the shapes essential. It will thus be observed that a joist has been provided which

may be conveniently and economically formed of strip stock through the fabrication of the strip material into two simple forms; the channel or other desirable form used in the chords, and an angle shaped form bent in a sharp angle at points of contact with the longitudinal members to form the transversely connecting web member. It is apparent that the joists may be constructed in various sizes from strip material of standard form which is readily available as the various sections have only to be formed and cut to the length desired and fabricated into the joists. Details of the projection welding methods preferably utilized in the formation of this joist have purposely been omitted as the same are believed to be well known in the art, however it may be pointed out that other means of fastening the various portions of the joist together may be utilized such as spot welding, riveting, and the like. It will be observed that the joist formed according to the disclosure herein made will be considerably stronger per pound of weight than the joists commonly known to the art formed of bar or shaped material.

What I claim is:

1. In a joist the combination of spaced chords of suitable cross section and an interconnecting web formed of strip stock, the web being of an angle shape in transverse cross section, the apex of the angle lying in a central vertical plane, the web being formed into diagonally positioned elements by being bent sharply without cutting any material so that substantially single line contacts are formed with the surfaces of the said chords, the said web being affixed to the said chords on the line of contact.

2. In a joist the combination of longitudinally extending chords formed of strip stock of desirable cross sectional shape and an interconnecting web formed of strip stock, the web being of an angle shape in transverse cross section, the apex of the angle lying in a central vertical plane, the web being formed into diagonally positioned elements by being bent sharply without cutting any material so that substantially single line contacts are formed with the surfaces of the said chords, the said web being affixed to the said chords on the line of contact.

3. A joist comprising longitudinally extending chords having a single transversely interconnecting web member formed of strip stock into diagonally positioned elements by being bent sharply without cutting any material so as to form single line contacts with the surfaces of the chords, the web member being of an angle shape in transverse cross section, the apex of the angle lying in a central vertical plane, the web member welded to the chords on the line of contact therewith so as to form a joist wherein the web members follow the lines of stress of the joist.

4. A joist comprising upper and lower chords of suitable cross section having a web member formed into diagonally positioned elements spacing the said chords apart, the said web formed of strip stock and being of an angle shape in transverse cross section, the apex of the angle lying in a central vertical plane, the said web being bent sharply at its points of contact with the surfaces of the said upper and lower chords so as to form substantially single line contacts therewith and to permit the diagonally positioned web elements to follow the lines of stress of the joist.

5. A joist comprising upper and lower chords formed of strip stock material of desirable cross section having a web member formed into diagonally positioned elements spacing the said chords apart, the said web formed of strip stock and being of an angle shape in transverse cross section, the apex of the angle lying in a central vertical plane, the said web being bent sharply at its points of contact with the surfaces of the said upper and lower chords so as to form substantially single line contacts therewith and to permit the diagonally positioned web elements to follow the lines of stress of the joist, the web autogenously welded to the chords on the line of contact therewith.

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