United States Patent [19]

Jackson

[11] **3,748,809**

[45] **July 31, 1973**

[54] **TRUSSED JOIST STRUCTURE**

[75] Inventor: **Edgar D. Jackson,** Claremont, Calif.

[73] Assignee: **Steel Web Corporation,** Alta Loma, Calif.

[22] Filed: **Aug. 9, 1971**

[21] Appl. No.: **169,998**

[52] **U.S. Cl.** **52/644,** 52/693

[51] **Int. Cl.** **E04c 3/42**

[58] **Field of Search** ..... 52/693, 692, 690, 52/643, 644, 639, 695, 694, 45, 143, , DIG. 6

[56] **References Cited**

UNITED STATES PATENTS

2,068,052	1/1937	Coddington	52/694 X
1,523,711	1/1925	Powell	52/695
2,732,251	1/1956	Meaker	52/71 X
1,899,344	2/1933	Macomber	52/690 X
3,531,904	10/1970	Sanford	52/693 X
3,570,204	3/1971	Birkemier	52/693 X
2,159,589	5/1939	Edison	52/644

FOREIGN PATENTS OR APPLICATIONS

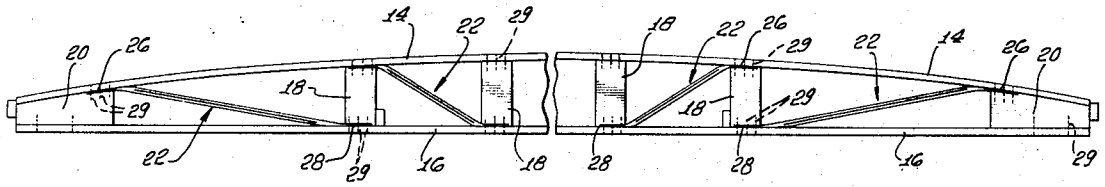
613,947	12/1948	Great Britain	52/693
857,139	11/1952	Germany	52/693

Primary Examiner—John E. Murtagh
Assistant Examiner—Carl D. Friedman
Attorney—William W. Haefliger, Calvin White and Louis J. Bachand, Jr.

[57] **ABSTRACT**

A special structure particularly applicable for a mobile home roof support including a joist frame braced with steel web members having flat connecting ends and an angled body portion.

1 Claim, 4 Drawing Figures



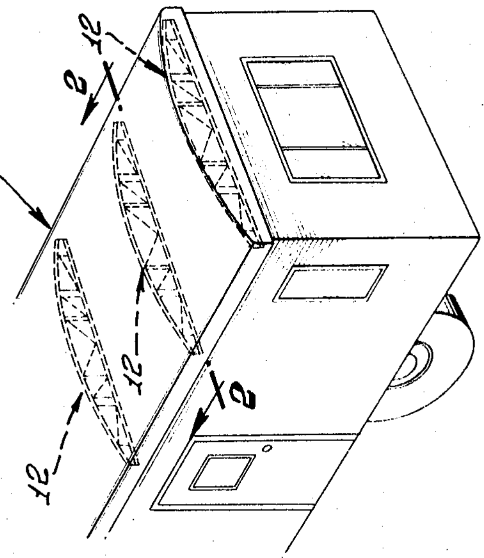


FIG. 1.

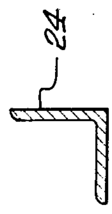


FIG. 4.

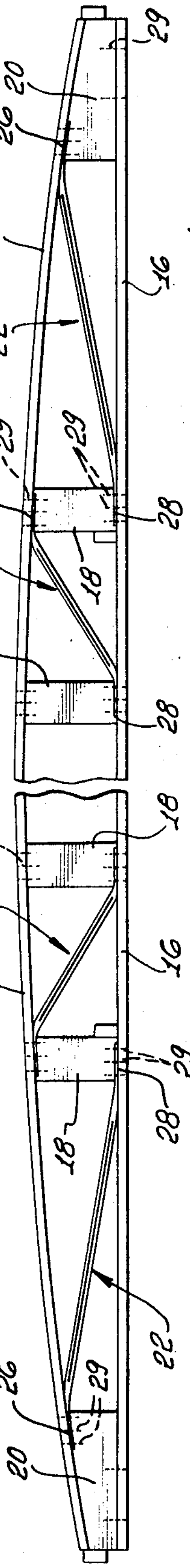


FIG. 2.

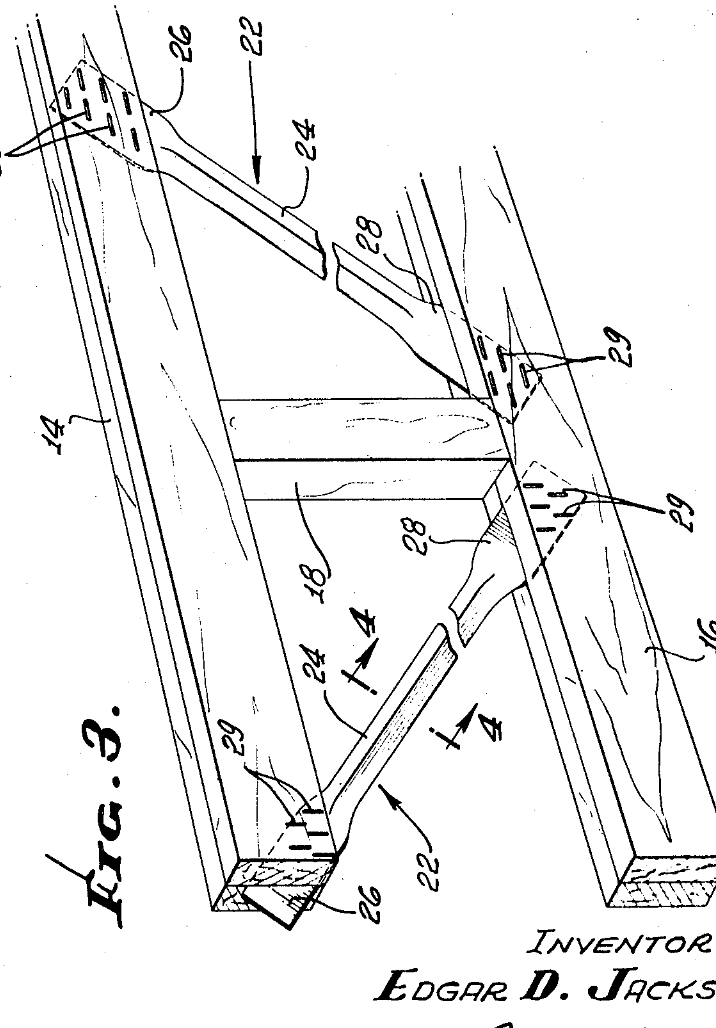


FIG. 3.

INVENTOR.
EDGAR D. JACKSON
BY Ronald L. Juniper
ATTORNEY.

TRUSSED JOIST STRUCTURE

BACKGROUND OF THE INVENTION

Prior to this invention difficulty was experienced in providing adequate support for mobile home roofs which was light in weight, durable, easy to use and not unreasonably expensive.

The existing conventional structures used for this purpose often were secured by glue and with gussets which tended to fail under stress. When such structures were made heavy enough to be durable, even further stress and consequent breakdowns of the structure were likely to occur. On the other hand, conventional lightweight roof supporting structures did not have sufficient rigidity and strength to be adequate for the heavy loads of large mobile homes.

Consequently, the primary purpose of this invention is to provide roof supporting structures adequate for large mobile homes which are light in weight and, at the same time, form a durable rigid support.

Other objects and advantages will be apparent from the following description.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a partial view, in perspective, of a mobile home utilizing trussed joist structure shown in ghost views in accordance with this invention.

FIG. 2 is an elevational view of a trussed joist taken through the vertical plane of support of 2—2 in FIG. 1 showing upper and lower chord members interconnected by short vertical compression web members and diagonal tension web members.

FIG. 3 is a fragmented perspective enlarged detail view of the diagonal tension web members interconnected to the upper and lower chords.

FIG. 4 cross-sectional view taken through 4—4 of FIG. 3 showing the angle formed section of the central body portion of a diagonal tension web member.

SUMMARY OF THE INVENTION

The special lightweight, rigid structures in accordance with this invention, which are particularly applicable for use as mobile home trussed joist roof supports include spaced upper and lower chord members connected by short, generally vertical compression web members and interconnected, diagonally mounted, steel web tension members.

DETAILED DESCRIPTION

Referring to the drawings, a preferred embodiment of this invention is illustrated which, in general, includes specially trussed joists **10** for support of a mobile home roof **12.** Each of these joists **10** has a frame which includes an elongated upper chord member **14** and a matching, elongated lower chord member **16** spaced vertically below it. The joists **10** are interconnected parallel to each other and spaced laterally sufficient to provide the required roof support.

A plurality of horizontally spaced, short, vertical web members **18** interconnect the upper chord member **14** and the lower chord member **16.** Toward the end of a joist **10** the chord member **14** and **16** approach closer to each other, so that they are interconnected by a vertical web member that functions as an end web member **20** which, as shown, takes the form of a short block shaped to conform to the adjacent abutting portion of the chord members.

In between at least some of the vertical web members **18** are diagonally mounted angled web numbers **22** which extend in a generally vertical plane interconnecting the upper chord member **14** and the lower chord member **16.** These angled web members **22** are formed with an angled central body portion **24** terminating at a flat upper end **26** intended to be secured to the upper chord member **14** and a flat lower end **28** intended to be secured to the lower chord member **16.**

Ordinarily, the angled web members **22** are made of steel strap which permits maximum strength with minimum weight. The legs which join to form the angled central body portion **24** extend approximately equally from their common juncture to their terminal edges.

In use, in the form shown in FIG. **3,** the angled web members **22** are mounted between two vertical web members **18** (or end web member **20** when adjacent to an end) of a joist **10** by sliding the flat upper end **26** in between two separate wooden elements of the upper chord member **14** adjacent to one vertical web member **18.** Similarly, the flat lower end **28** is slid in between two separate wooden elements of the lower chord member **16** adjacent to another vertical web member **18.** The flat ends **26** and **28** are secured in place by suitable means. In the form shown in FIG. **2,** the flat ends **26** and **28** are mounted between the respective upper and lower chord members **14** and **16,** and the adjacent respective vertical web member **18** or end member **20.**

Thus, as so mounted the angled web member **22** extends diagonally between upper chord member **14** and lower chord member **16** with the opposite ends **26** and **28** each adjacent to a vertical web member **18.** A particularly strong, rigid, truss support for the joist **10** is provided by this structure since load bearing pressure on the chord member **14** and **16** causes tensioning of the angled web member **22.** Such tension induced load is effectively carried by the angled web member **22** under compression of the vertical member **18,** since the normal load bearing pressure is through the vertical plane of the upper and lower chord members **14** and **16,** and the fastening of the ends **26** and **28** by staple or nail fasteners pass through the connected chords as in FIG. **3** or chord and vertical member **18** as in FIG. **2.** This structural arrangement permits the maximum strength of the angled web member **22** to squarely meet the vertical load bearing force thereby allowing the weight and number of bracing supports for the joist **10** to be reduced to the minimum.

It is vital to the performance of this invention that the staple or nail fasteners **29,** when used, extend through the connected wood members and ends **26** and **28,**with sufficient penetration to, not only hold the members in position under the tension stress of a load, but also, bind the members and end of the fastener ruptured angle web member by friction pressure. In this regard, the fasteners are driven blindly through the confined metallic end terminals **26** and **28.**

As an example, this truss joint structure may used chord members **14** and **16** which are one by two inch boards of sufficient length to provide the lateral span for support of a mobile home roof. The vertical web members **18** are 1 by 2 inch boards cut just long enough to extend between that portion of the upper and lower chords **14** and **16** where they are required to be placed in combination with the diagonally mounted angled web members **22** for the particular load which is to be supported. Since the distance between the upper and

lower chords **14** and **16** varies, depending on the distance from their end connection, the length of the vertical web member will accordingly vary.

The spacing of the vertical web member **18** also varies in accordance with the load to be supported, and for minimum suitable support typically ranges from 20 to 40 inches apart. An angled web member **22** which has been found suitable for use in this invention is made of 1 to 2 inch width steel angle strap which has an angled central body portion **24** of a length that substantially extends the full distance between the ends **26** and **28.** The length of each of the angled web members **22** varies according to the spacing of the upper and lower chords **14** and **16** and the vertical chords **18** adjacent to which the opposite ends **26** and **28** are mounted. These flat ends **26** and **28** are secured to chords **14** and **16** by fasteners such as 1½ inch long staples.

Other forms of the diagonal load bearing member **22** which have ends **26** and **28** interconnected by staple-type fasteners **29,** as previously discussed, may have body portion **24** which are tubular or corrugated, for instance, so long as they have similar rigidity to the angled body form described herein.

Though a preferred embodiment of this invention has been shown and described, this invention is not meant to be limited thereto, but is intended to embody all forms and modifications within the spirit of the following defined claims.

I claim:

1. A trussed joist frame structure comprising

a. a longitudinally elongated wooden upper chord member,

b. a longitudinally elongated wooden lower chord member substantially equal in length to said upper chord member,

c. means connecting said upper and lower chord members so that said upper chord member is spaced for support, when in use, above said lower chord member in the same vertical plane, said means including multiple upright wooden block members which are longitudinally spaced apart along the lengths of said chord members and located therebetween, the laterally horizontal widths of said chord and block members being substantially less than the maximum vertical dimension between said chord members, two of said block members being respectively located at opposite ends of said structure and being longitudinally elongated,

d. said means including multiple discrete metallic straps interconnecting said chord members at spaced locations therealong, said straps extending diagonally relative to said block members and having upper and lower flat end terminals confined flatly adjacent the inner sides of said wooden chord members and flatly adjacent the ends of said block members, each strap having one flat end terminal which is closest to the nearest end of the frame structure and which is also confined flatly adjacent the upper end of a block member, and each strap having an opposite flat end terminal which is furthest from the nearest end of the frame structure and which is also confined flatly adjacent the lower end of a next in sequence block member, the laterally horizontal widths of the straps also being substantially less than said dimension, each strap having an angled cross section at locations intermediate its end terminals,

e. there being nail type fasteners driven into said chord members from the exteriors thereof and blindly through said confined metallic end terminals which are ruptured immediately adjacent and about puncture openings formed by the fasteners, the thicknesses of said end terminals being substantially less than the vertical dimensions of the chord members, and the end terminals of the straps closest to the two elongated block members at opposite ends of the structure being confined and extending adjacent the inner side of the upper chord member, and

f. the upper chord member being concave toward the lower chord member of said joist structure so that the maximum vertical dimensions of said two end block members are each less than the maximum vertical dimension of each remaining block member.

* * * * *