RIDGE CONNECTOR FOR PITCHED TRUSS JOISTS

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FIG. 1

FIG. 3

FIG. 4

FIG. 2
RIDGE CONNECTOR FOR PITCHED TRUSS JOISTS

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ABSTRACT OF THE DISCLOSURE

A ridge connector interconnects the two end abutting sections of the cambered upper chord of a pitched truss joint. The connector includes a bearing plate abutting the end of one of the chord sections, a tongue anchored to the section, a coupling plate extending outwardly from the bearing plate for coupling to a cooperating plate on a companion ridge connector, and stiffening web members underlying the tongue and overlying the coupling plate.

This invention relates to ridge connectors for pitched truss joists. Structural pitched truss joists of one well known class comprise a lower chord, a cambered upper chord including two sections arranged end to end at a predetermined angle to each other and a plurality of links interconnecting the upper and lower chords. The adjacent ends of the upper chord sections are coupled together at the predetermined angle by means of a ridge connector.

To be suitable for this application, the ridge connector must be strong, must maintain the proper camber and must resist the various stresses which are applied to the truss during its manufacture, erection and use.

Accordingly, it is the general object of the present invention to provide a ridge connector for pitched truss joists of the class described which is characterized by the following functional and economic advantages:

1. It maintains the proper camber in the upper chord.
2. It is adaptable for use with pitched truss joists of various camber including ridge-connecting links arranged at various angles.
3. It resists effectively the various stresses placed upon it during manufacture, erection and use.
4. It may be applied in the manufacture of pitched truss joists of otherwise standard construction, using conventional truss joint fabricating machinery.
5. The finished truss joint may be assembled rapidly, without the necessity of using special equipment.

The manner in which the foregoing and other objects of this invention are accomplished will be apparent from the accompanying specification and claims considered together with the drawings, wherein:

FIG. 1 is a fragmentary view in side elevation of a pitched truss joint including the ridge connector of the present invention;
FIG. 2 is a perspective view of one of the connectors;
FIG. 3 is a fragmentary view in plan of the pitched truss joint of FIG. 1, illustrating the manner of applying the ridge connector; and
FIG. 4 is a fragmentary sectional view taken along line 4—4 of FIG. 3.

As illustrated in FIG. 1, the ridge connector of my invention is adapted for use with a pitched truss joint comprising broadly a lower chord 10, an upper chord comprising two sections 12 arranged end to end at a predetermined angle to each other and a plurality of interconnecting links of varying length, 14, 15 and 16. Lower chord 10 and upper chords 12 may comprise 2 x 4's, 2 x 6's or other structural pieces arranged flatwise, facing each other. The connecting links 16 may comprise lengths of aluminum tubing having flattened perforated ends.

The chords may be provided with arcuate slots 18 arranged at appropriate longitudinal spacings and with traverse openings 20 which intercept the slots. The truss joint is assembled by inserting the flattened ends of the links into slots 18 in overlapped relation and inserting pins 22 through openings 20 in the flattened ends of the links.

Truss joists of this class wherein the chords are arranged parallel to each other are a standard item of manufacture, with established manufacturing routines and efficiently designed manufacturing apparatus.

It is the purpose of the present invention to provide a connector for use in the manufacture of pitched truss joists of the same general class, without requiring substantial modification of the mill procedure and manufacturing apparatus.

To this end there is provided the unique connector illustrated in FIG. 2.

The principal modification of the conventional truss joint construction required to accommodate the connector of that figure is the provision of an upper chord 12 in two sections. These are formed, for example, by sawing a conventionally manufactured chord transversely at a location predetermined to intercept one of slots 18, thus providing a special recess 18a which communicates with the squared planar end of upper chord section 12. This may be used to anchor the herein described ridge connector which together with a cooperating ridge connector on the companion upper chord section forms a couple interconnecting the adjacent ends of the chord sections.

The ridge connector, indicated generally at 30, thus comprises a bearing plate 32 arranged substantially vertically, with planar dimensions substantially corresponding to the dimensions of the squared end surface of upper chord section 12. The base of a tongue 34 is fixed centrally to the inner face of the bearing plate. It extends inwardly substantially normal to the plane of bearing plate 32. It is generally arcuate in contour to conform to the arcuate contour of slot 18a in which it is received. Its outer portion, which is enlarged to provide increased strength, is provided with a traverse opening 36 dimensioned to receive a traverse pin 22a.

Bearing plate 32 also mounts at least one coupling plate 38. Preferably there are two such coupling plates, both of which extend outwardly from the outer face of bearing plate 32, substantially normal thereto and substantially parallel to each other, in spaced relation. It is to be noted that the coupling plates of one ridge connectors 30 are slightly offset laterally with respect to the cooperating coupling plates of the companion ridge connector so that all four plates may be interleaved in the final assembly in the manner shown in FIG. 3.

The coupling plates are formed with traverse openings 40, all of which are aligned in the final assembly to permit entry of a coupling bolt 42 with nut 43 by means of which the two ridge connectors releasably are coupled together.

Further included in the ridge connector is a lower web 44. This is arranged in a horizontal plane. Its base is fixed to the lower margin of the inside face of bearing plate 32. It underlies and is fixed also to vertical coupling plate 34.

Still further, there is provided an upper web 46. Like lower web 44, web 46 lies in a substantially horizontal plane. However, its base is fixed to the upper margin of the outer surface of bearing plate 32. It overlies and is fixed to coupling plates 38.

All of the foregoing elements preferably are formed integrally with each other in a casting of suitable dimensions and contour. In this casting, upper web 46, bearing
plate 32 and lower web 44 have the characteristic Z-shape particularly evident in FIG. 4.

The five component parts of the ridge connector thus cooperate in providing an assembly which achieves the desired result.

Bearing plate 32, which bears against the squared end of chord section 12, takes the compressive stress placed upon the truss joist and transmits it to a bolt 42. It also serves as a base which supports the other elements of the connector.

Tongue 34 with associated pin 22a connects the connector in tension to chord section 12. In addition, the pin takes part of the vertical load applied to the truss joist. It serves as index or reference point for cutting off the upper chord section at exactly the proper length to maintain proper camber. It takes the tension load of the truss joist during construction. It also takes the coupling load between the stiffening members.

Coupling plates 38, in cooperation with bolt 42, couple the two ridge connectors together at the established angle of camber. They take the compressive stresses transmitted to them from bearing plates 32.

Lower web 44 forms with the bearing plate a seat or pocket receiving the end of the upper chord section. Together with pin 22a it takes the vertical load. In addition, it acts as a stiffener for vertically arranged tongue.

Upper web 46 also assists in bearing and transmitting the stresses applied to the connector. In particular, it serves as a stiffener for vertically arranged coupling plates 38.

To mount the ridge connector on the truss joist assembly, upper chord sections 12 are cut to proper length using opening 20 as an index or reference point. Tongue 34 then is inserted in the resulting slot 18a and pin 22a inserted. The connector thus is mounted on the end of the upper chord section, with the latter firmly seated in the pocket provided by the inner face of bearing plate 32 and the upper surface of web member 44.

The cooperating ridge connector then is mounted on the adjacent end of the companion upper chord section 12 with the result that outwardly projecting coupling plates 38 of the two connectors are interleaved in the manner shown in FIG. 3. This aligns the openings through all of the coupling plates, as well as the openings through the upper flattened ends of truss joist links 16. As a consequence, bolt 42 may be slipped through all of the aligned openings and secured with lock nut 44, irrespective of the angle at which the upper chord sections are placed with respect to each other, and the resulting camber of the resulting pitched truss joist.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of my invention, or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. In combination with a pitched truss joist comprising a lower chord, a cambered upper chord including two sections arranged end to end at a predetermined angle to each other, and a plurality of links interconnecting the upper and lower chords, the adjacent upper chord section ends being provided with central, longitudinally extending slots intercepting the planes of the chord section ends, a ridge connector comprising a pair of connector members each including

(a) a vertical bearing plate having an inner face abutting one of the adjacent upper chord section ends,
(b) a vertical tongue received in the slot in the chord section, connected to the inner face of the bearing plate and extending inward substantially normal thereto,
(c) securing means securing the tongue to the chord section,
(d) at least one vertical, apertured coupling plate connected to the outside face of the bearing plate and extending outwardly substantially normal thereto,
(e) the coupling plates of the pair of connector members lapping each other with the apertures thereof in registry, and
(f) coupling pin means removably penetrating the registering apertures in the coupling plates of the pair of connector members.

2. The combination of claim 1 wherein each connector member includes a horizontal bottom plate connected to and extending inwardly from the bottom margin of the bearing plate, affixed to and underlying the tongue and underlying the associated chord section.

3. The combination of claim 1 wherein each connector member includes a top horizontal plate connected to and extending outwardly from the top margin of the bearing plate, affixed to and overlying the coupling plate.

4. The combination of claim 1 wherein the end of the tongue of each connector member is transversely apertured and wherein the securing means comprises a pin penetrating the aperture through the tongue and the associated chord section.

References Cited

UNITED STATES PATENTS
649,830 5/1900 Forsythe ------------- 287—20.94
1,665,782 4/1928 Hanna ------------- 287—20.94
2,280,121 4/1942 Green.
3,179,780 4/1965 Booher.
3,252,469 5/1966 Peake ------------- 52—66

FOREIGN PATENTS
54,073 5/1947 France.
84,235 11/1964 France.
599,817 6/1934 Germany.
547,023 8/1942 Great Britain

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U.S. Cl. X.R.

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