

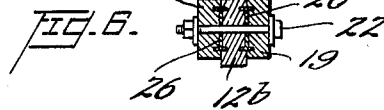
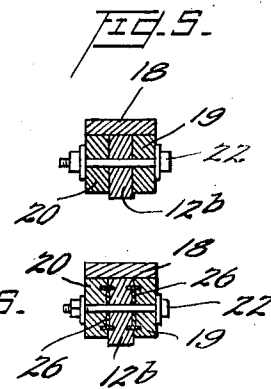
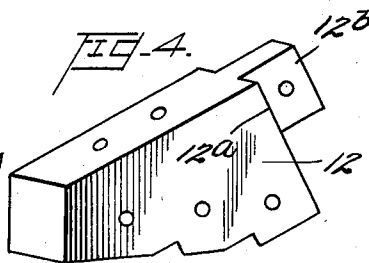
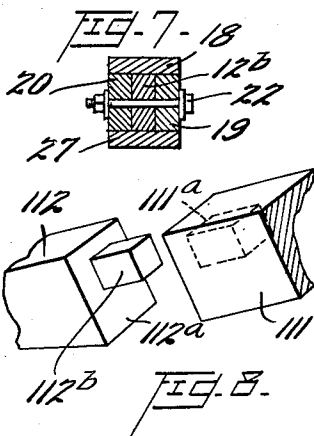
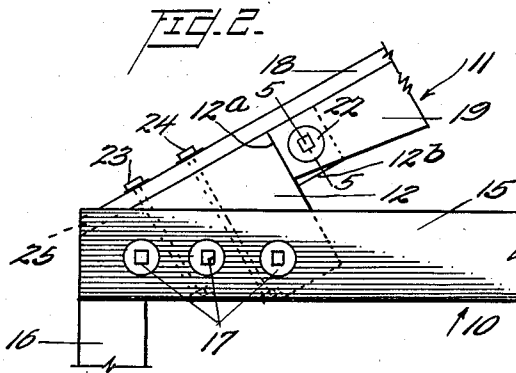
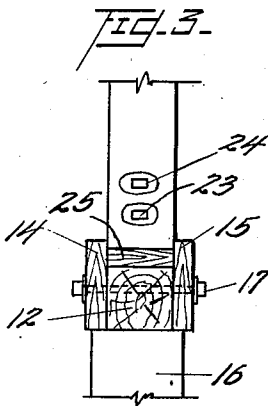
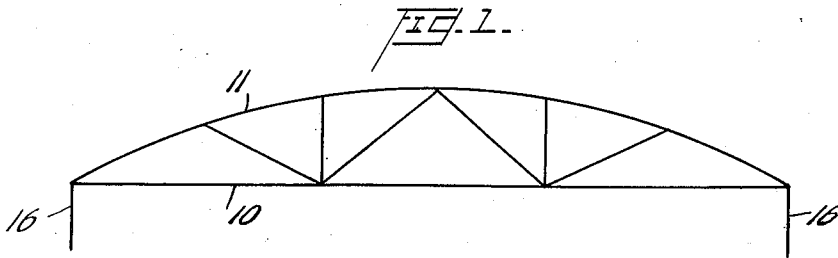
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TRUSS CONSTRUCTION

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TRUSS CONSTRUCTION

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7 Claims. (Cl. 108—23)

This invention relates to truss constructions and particularly to truss constructions of the type commonly made use of for supporting the roofs of building structures of various kinds, especially in certain commercial and industrial structures, where the distances between supporting walls is sufficiently great to render the use of trusses necessary or advisable.

More particularly the invention relates to wooden trusses as distinguished from trusses fabricated of metallic members. Many roof supporting wooden trusses are used annually, these being usually of moderate length and most commonly employed for supporting the roofs of structures such as garages, stores, markets, factories, auditoriums, theaters, or the like. Generally speaking, however, the wooden truss as heretofore constructed has included important metallic members of special design such as a metal shoe, U-strap or similar connection, particularly to connect the ends of the upper and lower chords together. It will of course be appreciated that the ends of the upper chord of the roof truss are rigidly attached to the ends of the lower chord and that in the general case the place of attachment of the ends of these two chords directly overlies the supporting wall or pillar. The means employed for rigidly securing together the ends of the upper and lower chords must be fully effective for the purpose intended, permitting no relative movements of the chords at this point. Hence it has generally been deemed necessary to employ the relatively expensive and complicated metallic attachment devices heretofore briefly referred to. These devices are quite efficient, but by reason of their special nature the cost of each truss which includes one or more of them, is substantially increased.

While various efforts have been made heretofore to perfect a connecting member, or truss "heel", of wood, which was at least the full mechanical equivalent of the metal connecting devices heretofore employed to secure rigidly to each other the ends of the top and bottom chords of wooden trusses, such efforts have for one reason or another not met with success. In accordance with the present invention, however, a wooden "heel" or connecting block consisting of one or more solid or laminated pieces is actually made use of for this purpose, the ends of the top and bottom chords being so designed that a portion of the block is received within a recess formed in the lower chord and another portion of the block suitably engages the upper chord. The connecting block is so shaped and is so se-

cured to each of the chords that the connection between the chords is extremely rigid, and likewise the connecting block in effect forms portion of the lower chord in that its undersurface is adapted to bear upon the upper surface of a truss seat such as a wall or pillar. The securing devices employed are simply metallic bolts of ordinary type used with or without timber connectors and are comparatively inexpensive, and a truss, the chords of which are connected at their ends in the manner specified, is not only rigid and durable but is considerably less expensive than other types in which the principal connecting means between the ends of the chords comprise special metallic shapes.

In the accompanying drawing certain forms of the invention are illustrated, but it will be understood that these embodiments are set forth by way of example only; and in adapting the invention for chords of various lengths and for specific purposes, minor changes in the design and arrangement of its component elements may be made, without departing from the scope of the invention as defined by the subjoined claims.

In the drawing:

Figure 1 is a diagrammatic representation of a truss of a type which may advantageously embody the invention;

Figure 2 is a side elevation, on a much larger scale, of one end of the truss shown in Figure 1, showing the junction between the upper and lower parts;

Figure 3 is an end elevation of the truss shown in Figure 2;

Figure 4 is a perspective view of one of the connection blocks which may be used;

Figure 5 is a section on line 5—5 of Figure 2;

Figure 6 is a section taken at the same point and illustrating a use of timber connectors in the truss construction;

Figure 7 is a similar section showing a modified top chord construction; and

Figure 8 is a fragmentary view in perspective of still another form of connection, the heel block and the upper chord being separated for the purposes of better illustration.

The truss shown in Figure 1 includes a continuously curved upper chord, but it will be appreciated that the upper chord need not necessarily be curved and that the chord ends of wooden trusses of numerous other types and designs may be connected in the novel manner about to be described.

The lower chord of the truss is generally indicated at 10 and the upper chord at 11, these

chords being angularly disposed in the customary manner. The lower chord 10 is provided with a recess in its end to receive the connection block 12, shown in perspective in Figure 4. The recess in the lower chord 10 provided for the reception of the block or heel 12 may either comprise a vertical slot or notch formed in the end of a solid chord, or it may comprise a vertical space between two parallel members such as 14 and 15, disposed vertically and suitably secured together so as to act as one member. The undersurface of the connecting block 12 is preferably, although not necessarily, flush with the undersurfaces of the members 14 and 15 so that these three surfaces form in effect one continuous surface which rests upon the top of a truss seat 16, which may be portion of a wall, or top of a pillar. Block 12 is rigidly secured in the position in which it is shown by means of bolts 17 which extend horizontally through aligned apertures in the members 14 and 15 and block 12.

The upper chord 11 in the embodiments shown in Figures 1 to 7 inclusive comprises several members, such, for instance, as the top member 18 and the vertical parallel members 19 and 20 to which the top member 18 is rigidly attached. Where the upper chord includes parallel vertical members such as indicated at 19 and 20, the end surfaces of these members abut against the inclined face 12a of block 12 and lie upon opposite sides of the tongue 12b which is an integral part of the heel 12 and extends therefrom upwardly at an inclination, as shown most clearly in Figure 4. A securing bolt 22 passing through aligned apertures in the vertical members 19 and 20 in the tongue 12b rigidly attaches members 19 and 20 to the block 12. Securing bolts 23 and 24 serve to attach rigidly the top member 18 of the upper chord to the connection block or heel 12. The extreme lower end of the top member 18 of the upper chord projects downwardly into the recess intermediate webs 14 and 15, and as clearly shown at 25, thus providing an additional lateral support for the upper chord.

As shown in Figure 6 of the drawing, the various bolts such as 17, 22, 23 and 24 may be augmented by timber connector elements of known types, such as the so-called split rings shown at 26, these rings having annular flanges which enter similarly formed grooves in the adjacent surfaces of the wooden members. It will be appreciated that the application of these rings will in all cases be similar to that illustrated in connection with bolts 22.

When unusually high compressional stresses are to come upon the top chord, it may be desirable to add a member 27 which lies under the tongue 12b and parallel to the member 18, as illustrated in Figure 7 of the drawing. It will be appreciated by those skilled in the art that the top member 18 and/or the bottom member 27 may be made integral with the members 19 and 20 and also that the members 19 and 20 or the members 18 and 27 may be integral, above or beyond the tongue 12b of the block 12, if

desired. For example, in Figure 8 there is shown a solid upper chord member 111 which is provided with a socket 111a which is adapted to receive the tongue or tenon member 112b formed on the heel block 112 and analogous to the tongue 12b of the preceding embodiments, the end of the chord 111 abutting the inclined surface 112a of the block.

The invention is susceptible of very considerable modification, but in every instance the upper chord will at its outer end be associated with the upper portion of the connecting block and the end of the lower chord will be slotted or recessed for the reception of this block. With such construction extreme rigidity is realized, even though the securing devices employed are simply bolts with or without conventional timber connector pieces 26.

The truss construction described is of great simplicity and may be readily assembled in the shop or in the field. It is extremely rugged and durable and is much less costly than the generally similar truss constructions now on the market.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. A roof truss construction comprising an upper chord, a lower chord, and a connecting block, the end of said lower chord having a recess opening upwardly for the reception of said block, said block extending above said lower chord and into engagement with the end of said upper chord, and means rigidly securing both said chords to said block.

2. The combination set forth in claim 1 in which a portion of the upper chord extends into the recess formed in the lower chord.

3. The combination set forth in claim 1 in which the upper chord includes an element which overlies the connecting block and an element the end surface of which seats against the block.

4. The combination set forth in claim 1 in which the upper chord includes spaced vertical members the end surfaces of which bear against the connecting block and the connecting block includes a tongue which lies intermediate said members and is secured thereto.

5. The combination set forth in claim 1 in which the recess in the lower chord also opens downwardly and the lower surface of the connecting block is adapted to bear upon the upper surface of a connecting wall or pillar.

6. The combination set forth in claim 1 in which the connecting block includes a projecting tongue and the end of the upper chord includes vertical and horizontal portions which surround said tongue upon all sides.

7. The combination set forth in claim 1 in which the connecting block includes a projecting tongue and in which the upper chord is solid and is provided at its end with a mortise shaped to receive the tongue of said block.

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