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J. E. MYER

2,099,273

TIMBER CONNECTER

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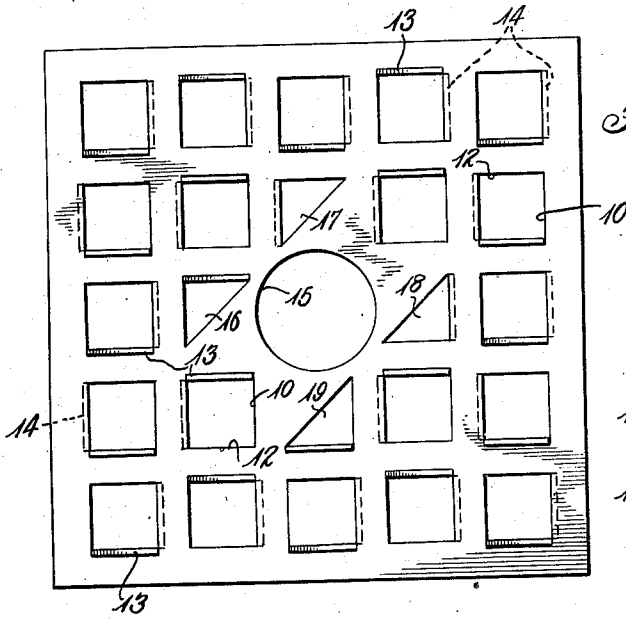


Fig. 1.

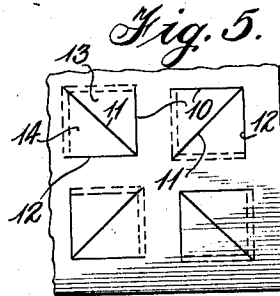


Fig. 5.

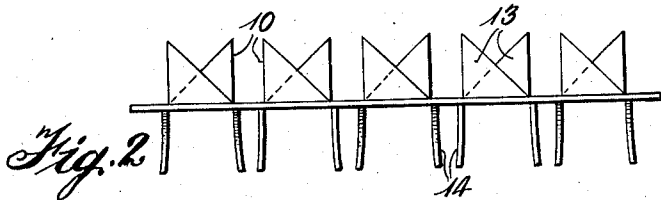


Fig. 2.

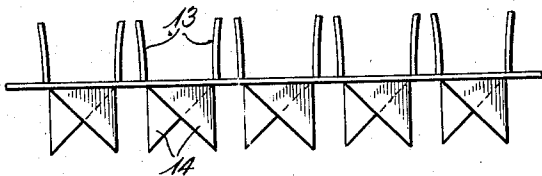


Fig. 3.

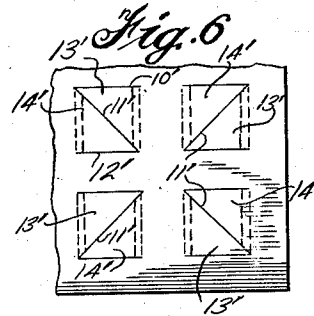


Fig. 6.

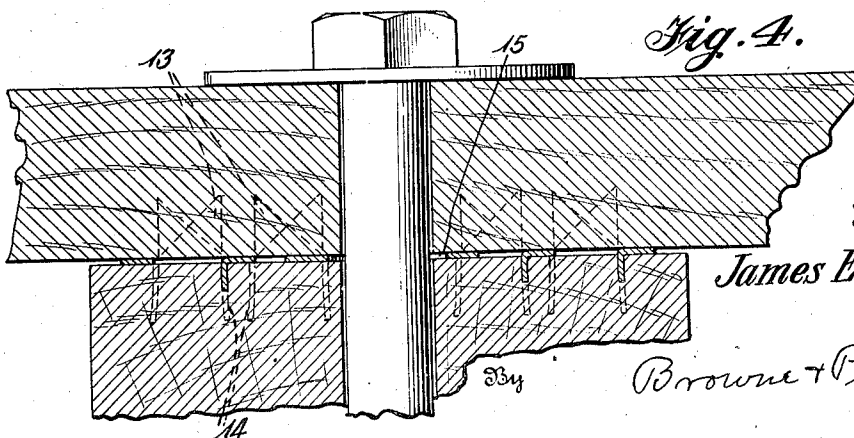


Fig. 4.

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TIMBER CONNECTER

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4 Claims. (Cl. 20—92)

The invention relates to timber connectors of the bolt and plate type, and has as an object the provision of a connector which may be very cheaply produced yet will give very efficient results in service.

It is an object of the invention to provide a timber connector in which the teeth are formed relatively thin and flat in a direction to be parallel with the grain of the respective timbers between which the connector is placed.

It is a further object of the invention to provide a connector in which the teeth will be slightly deflected as they enter the grain of the timbers whereby to securely lock the connector in place.

It is a further object of the invention to provide a connector which may be produced by metal stamping and consequently will be exceedingly cheap to produce.

Further objects of the invention will appear from the following description when read in connection with the accompanying drawing showing an illustrative embodiment of the invention, and wherein:

Figure 1 is a plan view of the timber connector;

Figs. 2 and 3 are front and side elevational views respectively of the structure of Figure 1;

Fig. 4 is a detail vertical section through timbers connected by the connector in combination with a bolt;

Fig. 5 is a detail view illustrating the manufacture of the device by metal stamping; and

Fig. 6 is a like view showing a different arrangement of teeth.

As shown, the connector is of the bolt and plate type and of a form particularly adapted to application of timbers at right angles as at the seat of railway ties upon the stringers of a bridge. For this use the teeth upon each side of the connector are shown with their flat faces lying in parallel planes, said parallel planes upon the opposite sides of the plate being at right angles to each other.

In the preferred form the device is produced as indicated in Figure 5 by a stamping operation which severs the metal upon lines 10, 11, and 12. The triangular-shaped portions of metal thus freed at their altitude and hypotenuse and remaining attached to the body of the plate at their bases are then turned in opposite directions so as to provide a rectangular opening having a tooth projecting at opposite sides of the plate from two contiguous sides of the opening.

The device may be produced by a three part

stamping operation. The first stamping produces the plate with the central opening. By the second step all teeth projecting from one face of the plate are freed at two edges and bent outwardly. The third step with the plate reversed frees the remaining edge of certain teeth and bends them outwardly to project from the remaining side of the plate.

The teeth 13, 14 thus provided are located with their flat sides at right angles on the opposite sides of the plate in the form illustrated. It will be obvious that if tooth 13', Figure 6, be freed along a line 10' which lies opposite and parallel to the line 12' of the tooth 14', the result when the partially freed portions are struck in opposite directions with the teeth 13' in one direction and the teeth 14' in the opposite direction will be teeth lying in parallel lines upon the opposite sides of the plate which will be correct for use between timbers wherein the grain is parallel with each other.

In the form of the invention shown certain of the teeth upon each side of the plate have their vertical edges 10 turned in opposite directions whereby to resist more effectually movement of the timbers in either direction parallel with their grain.

To preserve the strength of the plate about the bolt opening 15, certain of the stampings as 16, 17, 18 and 19 are made in the form of triangular openings, but one tooth being struck from the plate at these locations and certain of the said single teeth are struck from the plate in opposite directions from others thereof about the opening.

Since the teeth in the act of penetrating the timbers between which the connector plate is applied will offer more resistance to penetration at their hypotenuse than at their vertical edges, there will be a stress applied to the teeth tending to cause them to slightly cant in the wood thus providing a greater resistance to displacement laterally of the wood.

In the act of stamping by any ordinary process it is substantially impossible to make the teeth exactly flat and perpendicular to the plate, the result of the stamping operation being a slightly curved form of teeth, as clearly indicated in Figures 2 and 3. This form of teeth will result in a deflection in a direction normal to their flat surfaces as they enter the wood, thus providing a dovetailing of the teeth in the wood, further serving to prevent their removal under the stresses of service.

By virtue of the formation of the teeth by

striking out metal of the plate interiorly of its margins, no metal is thrown to waste and the full strength of the plate out to its initial margin is preserved to take the thrust against the teeth. 5 Further any desired number of teeth may thus be formed upon a plate, consistent with their desired size, as compared with the formation of teeth at the edges only of a plate. The width of the undisturbed margins, and of the spaces 10 between the openings should be properly proportioned to the size of the teeth, whereby to retain sufficient tensile strength of the said portions to resist the strain to be applied to the teeth.

The location of the teeth with their bases parallel with two margins of the plate and perpendicular to the remaining margins is of great importance. By this structure the teeth will be parallel with the grain of the timber and will thus enter the grain with minimum cutting of 20 fibers, whereby substantially the full strength of the timber will be preserved, and minimum force is required to seat the connector.

The right-angled triangular form of tooth is of great advantage, for the reason that there is 25 thus provided an edge perpendicular to the thrust braced by an extent of metal constantly increasing in width as the plate is approached. For the service particularly indicated herein the number of perpendicular edges facing in each direction 30 at each side of the plate is substantially equal. For a purely tensile or purely compressive timber element all vertical edges at each side of the plate may be made to face in the same direction.

While the plate in the form illustrated is shown 35 as square, it is obvious that for use in splicing timbers with their grain parallel, the length of the plate parallel to the grain may be made in excess of the width thereof, which will result as an effective preventive of pivoting of the timbers about 40 the bolt.

Minor changes may be made in the physical embodiment of the invention without departing from the spirit thereof within the scope of the appended claims.

45 I claim:

1. A timber connector comprising: a plate; relatively thin flat right-angled triangular teeth projecting from each side of said plate; the altitude edges of said teeth extending perpendicularly to said plate, the flat surfaces of said teeth lying 5 in parallel planes on each side of the plate; said planes on opposite sides of the plate being directed so as to be parallel with the grain of the respective timbers to be connected.

2. A timber connector comprising: a sheet 10 metal plate having right angled triangular teeth projecting from the opposite faces thereof; pairs of said teeth, one projecting from each face of the plate resulting from severing the diagonals of a plurality of rectangular portions of the plate 15 and two sides of said portions to free two sides of right-angled triangular portions and then bending one of each of said freed portions at its base still integral with the plate, in opposite directions; corresponding sides of said rectangular 20 portions throughout the plate lying in parallel lines.

3. A timber connector comprising: a sheet metal plate having teeth projecting from both 25 faces thereof with flat sides being parallel on each face and at right angles on opposite faces; pairs of said teeth projecting one from each side of the plate being formed by two right angle cuts and a diagonal cut all intersecting at a common 30 point, the portions freed by said cuts being bent in opposite directions to positions substantially perpendicular to the plate.

4. A timber connector comprising: a sheet metal plate having right angled triangular teeth 35 struck from the metal of the plate and projecting from the opposite sides thereof; the flat surfaces of said teeth on each surface of the plate lying in parallel planes directed to be parallel with the grain of timbers to be connected; said teeth standing substantially perpendicular to the faces 40 of the plate and being slightly curved from their bases to their points whereby to be somewhat deflected from the perpendicular when forced into timbers to be connected.

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