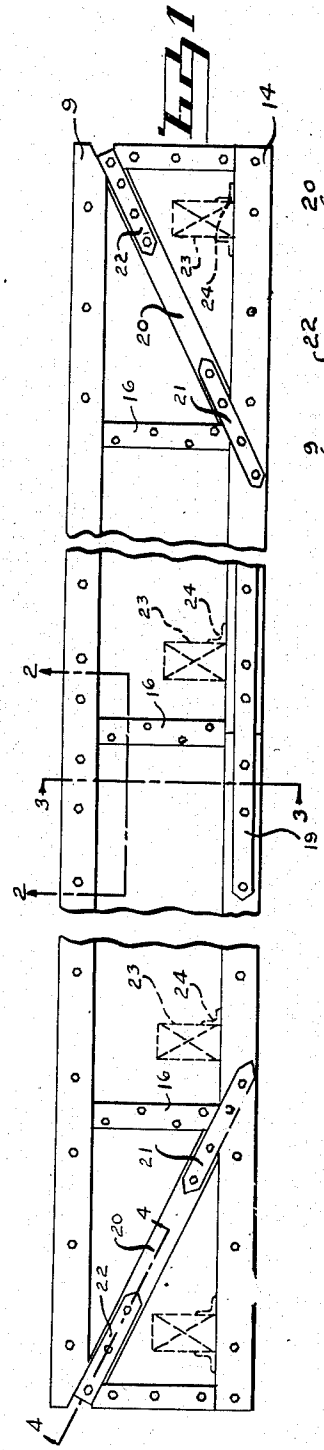
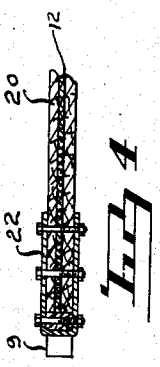
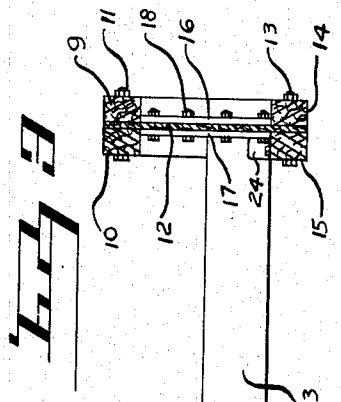
Nov. 28, 1944. R. BUTLER 2,363,568

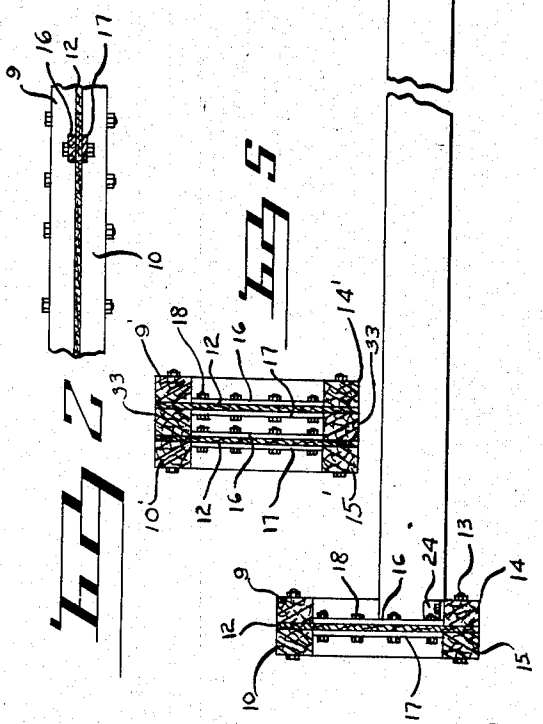
TIMBER PLATE GIRDER

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TIMBER PLATE GIRDER

Reuben Butler, Detroit, Mich.

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6 Claims. (Cl. 20—0.5)

My invention relates to a new and useful improvement in a timber plate girder adapted for use in construction purposes for spanning moderately wide distances between supports for the purposes of carrying roof or floor loads.

It is an object of the present invention to provide a girder formed from timber and so constructed and arranged that it will resemble, in cross sectional area, the well known steel I beam and be adapted to perform substantially all of the functions thereof.

It is another object of the present invention to provide a timber plate girder formed from several parts and so constructed and arranged that the compressive and tensional stresses are transferred from one part to the other and neutralized at any point along the entire horizontal surface at which a load may be applied.

Another object of the invention is the provision of a timber plate girder of this class having an upper cord and a lower cord connected by a panel and so constructed and arranged that the normal shearing action on a girder, at the support, is relieved through the transference of tensional stresses from the lower cord to the upper cord.

Another object of the invention is the provision of a girder formed from timber and so constructed and arranged that it very closely approaches in size, load bearing capacity and weight a steel girder formed from I beam.

Another object of the invention is the provision of a timber plate girder formed from timber and so arranged and constructed that a maximum strength, minimum weight, compactness and neatness in appearance is obtained as well as ease in handling while erecting.

Other objects will appear hereinafter.

It is recognized that variations and modifications may be made in the detail of structure illustrated without departing from the spirit of the invention, and it is intended that such variations and modifications may be embraced within the claims which form a part hereof.

Forming a part of this specification is a drawing in which,

Fig. 1 is a side elevational view of the invention, with parts broken away and parts removed.

Fig. 2 is a fragmentary, sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a sectional view taken on substantially line 3—3 of Fig. 1.

Fig. 4 is a fragmentary sectional view taken on line 4—4 of Fig. 1.

Fig. 5 is a cross sectional view of a slightly modified form of the invention.

As shown in the drawing, I provide a pair of upper cords or rails 9 and 10 formed from wood. These cords or rails 9 and 10 are bolted together by the bolts 11 in clamping relation along the upper edge of a panel 12. This panel 12 is formed from veneer wood. Bolted by the bolts 13 in clamping relation along the lower edge of the panel 12 are the lower cords or rails 14 and 15. At the meeting edges of the panel sections are secured web stiffeners 16 and 17 held in clamping relation to the panel meeting edges by the bolts 18. At their meeting edges, the rails 9, 10, 14, and 15 are secured by over-lapping reinforcing metal straps 19.

At the ends of the girder are provided the diagonally directed braces 20 which serve as a means for connecting the upper cords or rails 9 and 10 with the lower cords or rails 14 and 15. Metal straps 21 and 22 serve to connect opposite ends of the braces 11 to the structure.

As shown in dotted lines in Fig. 1, the purlines 23 rest upon the upper face of the lower cord 13 or 14 and secured to this cord or rail is a metal angle clip 24 which is also bolted or otherwise secured to the purlin.

In this way, I have provided a girder formed from wood and having substantially the lightness and strength of a steel I beam. It is so constructed that the shearing at the ends, where the girder is supported by the standards or columns, is prevented through transference of the tensional stresses from the lower cords or rails 14 and 15 to the upper cords or rails. Because of the connection of the upper and lower cords and rails by the veneer panel a maximum strength and proper transference of loads is provided, thus affording a structure highly practical. The construction is also such that when a load is placed on the girder at any point, the stresses on the girder are distributed so that there is never a localization of stresses at any one point.

In Fig. 5, I have shown a modified form of the construction adapting the same to use as a column or supporting standard. In this construction I have used a pair of panels 12 clamped against a central cord or girder 33 by means of the outer cords or girders 9', 10', 14' and 15'. The construction is substantially the same as shown in Fig. 1 but the illustration in Fig. 5 indicates that the construction may be used in units to provide any size or strength desired.

What I claim as new is:

1. A timber plate girder comprising an elongated panel of veneer wood; a pair of rails mounted on the opposite longitudinal edges of

said panel; means for securing said rails in clamping relation to said panel; and diagonally extending braces on opposite ends of said structure secured to the face of said panel and projecting upwardly from the lower edge thereof and outwardly toward the ends thereof.

2. A timber plate girder of the class described comprising a plurality of elongated veneer wood panels abutted together at adjacent ends; means for securing said panels together at the abutting ends; a plurality of rails abutted together at their adjacent ends and lying along the longitudinal edges of said panels in engagement with the faces of said panel and projecting outwardly therefrom, said rails being positioned along said edges at opposite sides of said panel; and securing means projected through said rails and through said panel for clamping said rails against said panel; and diagonally extending members on opposite ends of said structure for transferring strains and stresses and projecting upwardly from the lower edge of said panel.

3. A timber plate girder of the class described comprising a plurality of elongated veneer wood panels abutted together at adjacent ends; means for securing said panels together at the abutting ends; a plurality of rails abutted together at their adjacent ends and lying along the longitudinal edges of said panels in engagement with the faces of said panel and projecting outwardly therefrom, said rails being positioned along said edges at opposite sides of said panel; securing means projected through said rails and through said panel for clamping said rails against said panel; diagonally extending members on opposite ends of said structure for transferring strains and stresses and projecting upwardly from the lower edge of said structure and outwardly toward the ends thereof and means for securing said rails at their abutting ends in fixed relation to each other, said means embodying a strap secured to said rails and overlying the abutting ends.

4. A timber plate girder comprising an elongated panel of veneer wood; a pair of rails mounted on the opposite longitudinal edges of said panel on opposite faces thereof, the pair of rails at each edge being in alignment with each other; means for securing aligned rails in clamping relation to said panel; and diagonally extended braces mounted on opposite faces of said panel and projecting upwardly from the lower edge thereof, and outwardly toward the ends thereof and abutting at their opposite ends with the faces of said rails.

5. A construction of the class described comprising at least a pair of elongated veneer wood panels positioned in parallel, spaced relation and at least three rails extended along the longitudinal edges of said panels, one of said rails being positioned between said panels and the two outermost rails engaging opposite faces of said panels; means for securing said rails and said panels in clamping relation; and diagonally extending braces mounted on said structure and projecting upwardly from the lower edges thereof and outwardly towards the ends thereof.

6. A construction of the class described comprising an elongated panel of veneer wood; a pair of rails mounted on the opposite faces of said panel at each of the longitudinal edges thereof, the rails at each edge being in alignment with each other and extending outwardly from the face of the panel; means for securing aligned rails in clamping relation to said panel; and diagonally extending braces traversing said panel and connecting the rails at one edge with the rails at the other edge of said panel.

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