

Sept. 29, 1942.

N. GREENWELL ET AL

2,297,101

BUILDING STRUCTURE

Filed Nov. 18, 1939

2 Sheets-Sheet 1

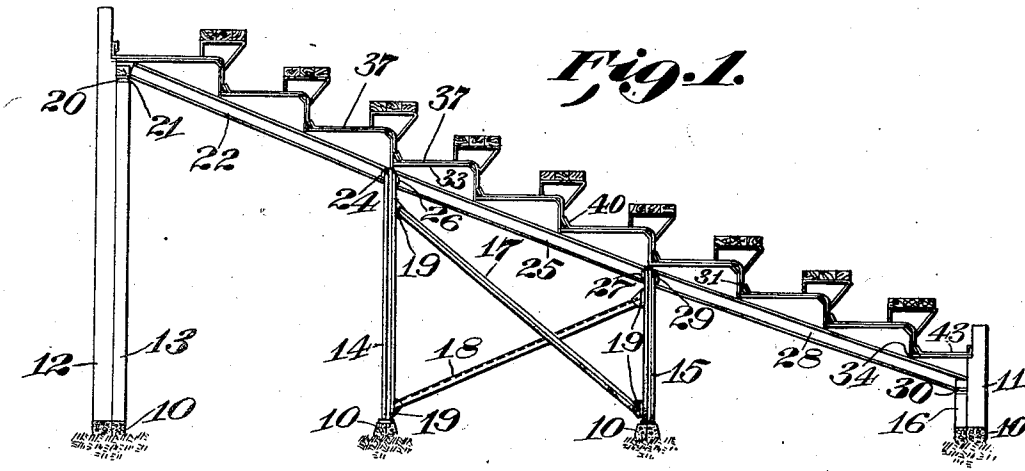


Fig. 1.

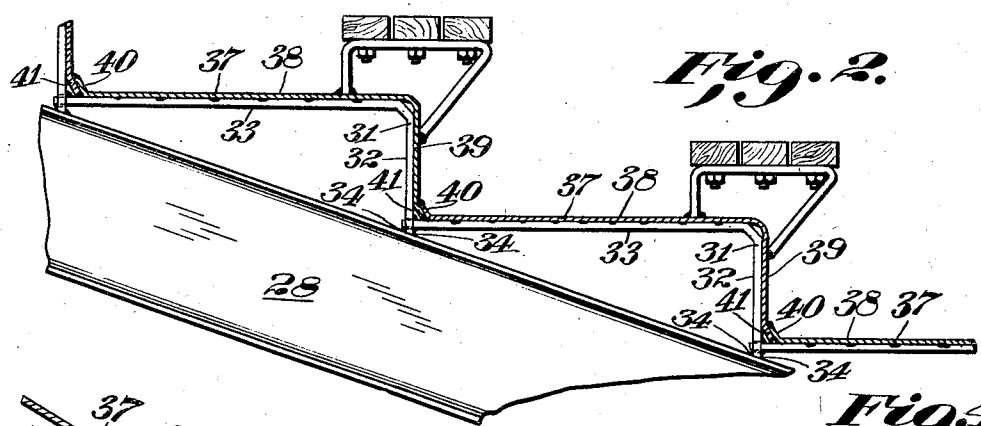


Fig. 2.

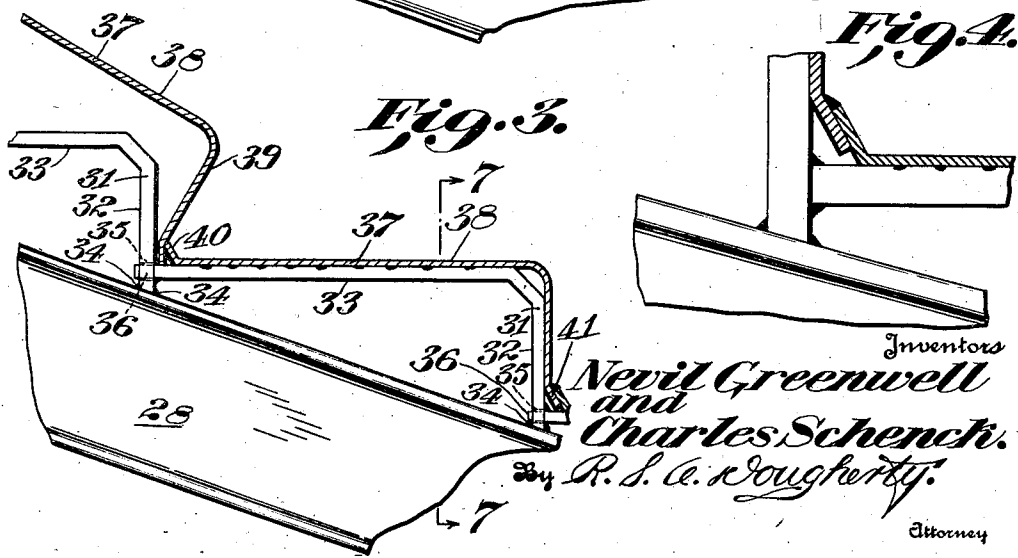


Fig. 3.

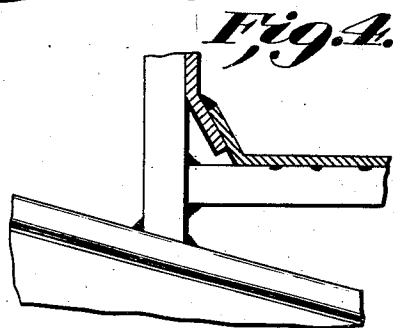


Fig. 4.

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2 Sheets-Sheet 2

Fig. 5.

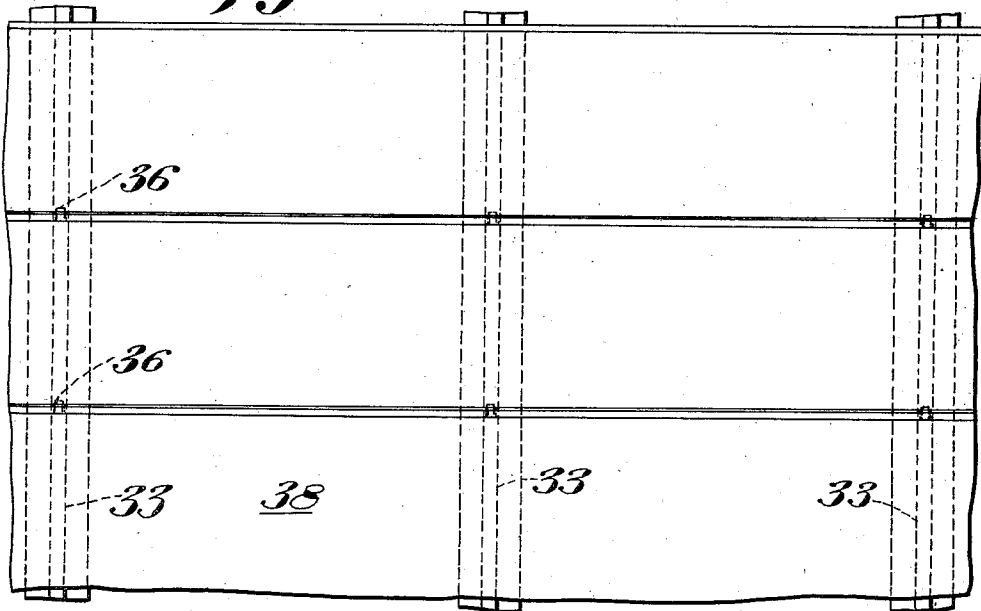


Fig. 6.

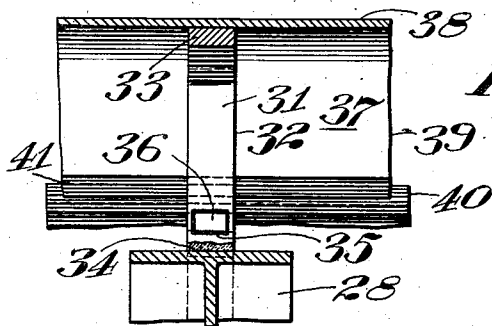
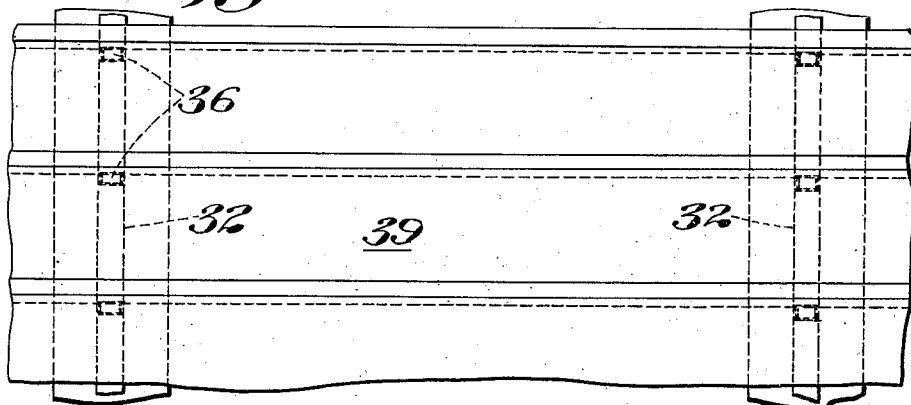


Fig. 7.

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2,297,101

BUILDING STRUCTURE

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Application November 18, 1939, Serial No. 305,076

1 Claim. (Cl. 189—1)

This invention relates to grandstands and the like structures having a decking of preformed metal and has for its objects to simplify and improve the construction of such structures, to reduce to a minimum the field labor incidental to erection, to provide a water-tight construction, thus making the space under the structure available for other uses, and to provide a novel interlocked and welded condition where the plates are joined.

An object of the invention is to provide a novel rigid structure which is readily assembled by interlocking the constituent members thereof.

Another object of the invention is to provide a structure composed of a series of members which are small enough to be easily handled and transported and permit storage in a relatively limited area.

A further object of the invention is to provide a supporting structure which is easily assembled and yet is of more durable construction than heretofore known or used.

A still further object of the invention is to provide a supporting structure the constituents of which can have slightly varying dimensions without offering difficulty of assembly.

Other features and details of the invention are set forth hereinafter and shown in the accompanying drawings in which:

Figure 1 is a diagrammatic side view of a grandstand constructed according to my invention;

Fig. 2 is an enlarged side view showing a portion of the assembly in greater detail;

Fig. 3 is a side view of two of our novel deck plates showing the manner of assembly;

Fig. 4 is a side view of an alternative form of the bracket;

Fig. 5 is an enlarged top plan view of a portion of the grandstand;

Fig. 6 is a front elevation of a portion of the grandstand; and

Fig. 7 is a section taken along line 7—7 of Fig. 3.

Referring to the drawings more in detail, concrete blocks 10 are set into the ground to act as a foundation for front wall 11, back wall 12, and supports 13, 14, 15 and 16. Strengthening members 17 and 18 are positioned diagonally between supports 14 and 15 and are secured to the supports through gusset plates 19. Mounted upon the uppermost end of supports 13, 14, 15 and 16 are the rafters 22, 25 and 28. Rafter 22 extends from support 13 to support 14, being fastened to support 13 by bearing angle 21 which in turn is

fastened to bearing plate 20 and is preferably a standard I-section. Where rafter 22 joins support 13, a portion of the lower flange at the end of the rafter is cut away as shown at 23 to provide for fastening engagement of the web of the rafter with bearing angle 21. Where rafter 22 joins support 14, a connecting angle 24 is provided as a fastening means. Rafter 25 extends from support 14 to support 15, connections being formed through angles 26 and 27. Rafter 28 extends from support 15 to support 16, being fastened to support 15 by angle 29 and to support 16 by bearing angle 30, the latter fastening being substantially the same as that of support 13.

Upon the rafters 28 are mounted brackets 31 which are made from flat strips of metal and comprise vertical members 32 and horizontal members 33. Each of the vertical members 32 is welded to the rafter at point 34 and is provided with slot 35 a short distance above point 34. The free end of the horizontal member 33 has portions cut away to form a tenon 36 which fits into slot 35 of the bracket immediately above and is welded thereto.

Upon the brackets 31 are mounted deck plates 37, each of which comprises tread portion 38 and riser portion 39 and which conforms substantially to the outline of the bracket except at its edges which are bent to form continuous flanges, tread portion 38 having a flange 40 disposed at an angle of approximately 60° from horizontal, and riser portion 39 having a flange 41 disposed at an angle of approximately 30° from the vertical. Flange 40 of tread portion 38 of one deck plate forms a lap joint with flange 41 of riser portion 39 of the next deck plate, the joint being welded as shown in the drawing.

An alternative form of bracket is shown in Figure 4. It will be noted that instead of a slot and tenon joint, a welded butt-joint is employed to join the parts together.

To assemble the grandstand, the substructure, including the rafters 22, 25 and 28, is first constructed. The brackets 31 are then fastened to the rafters 22, 25 and 28 from the top downwardly, the first bracket being carefully lined up and welded to the rafter, the tenon of the next bracket being slipped into the slot of the first bracket and welded. This is continued all the way down to the end of the rafters. The alternative way of accomplishing this operation is shown in Figure 4, the tenon and slot being omitted and an ordinary weld substituted therefor. It will be seen that the separate brackets and their easy assembly is a distinct advance

over the old methods of accomplishing the same result, the prior brackets being in one piece, thereby making them extremely bulky to handle and difficult to assemble with the rafters. The deck plates are next laid on the brackets and welded thereto from the bottom of the grandstand upwardly in the following manner. The bottom plate 43 which comprises a tread portion 38 and a flange 40 is placed on the bottom bracket and secured at intervals to the front wall 11. The deck plates 37 are then assembled as clearly shown in Figure 3, the flange 41 of the riser portion 39 being placed behind flange 40 of tread portion 38 and rotated into position upon its supporting bracket. The flange 40 of tread portion 38 is, as mentioned heretofore, disposed at an angle of approximately 60° from the horizontal and when flange 41 of riser portion 39 is assembled therewith it will bear against flange 40 at an angle of approximately 30° from the vertical. However, flange 41 when formed is bent at an angle slightly in excess of 30° so that it will exert pressure against flange 40 when the plates are assembled. The flanges 40 and 41 are then welded, which gives considerable strength to the structure, and also makes it

water-tight. This type of structure is desirable as it is possible to install locker and dressing rooms under the decking without further water-proofing.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

A structure comprising inclined rafters, brackets supported on said rafters, said brackets comprising a horizontal portion and a vertical portion, said vertical portion being slotted at a point spaced from but adjacent to its rafter engaging end, said horizontal portion being tenoned at its free end and being supported within the slot in the vertical portion of an adjacent bracket, and deck plates supported by said brackets each of said deck plates having a tread portion and a riser portion, said tread portion and said riser portion having flanges at their free edges in lapping engagement with the flanges of the riser portion and the tread portion of adjacent deck plates, the flanges of said riser portion being positioned behind the flanges of said tread portion.

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