Jan. 1, 1935. W. N. WOODBURY 1,986,174

FABRICATED METAL GRAND STAND

Filed Nov. 30, 1931

Fig. 1

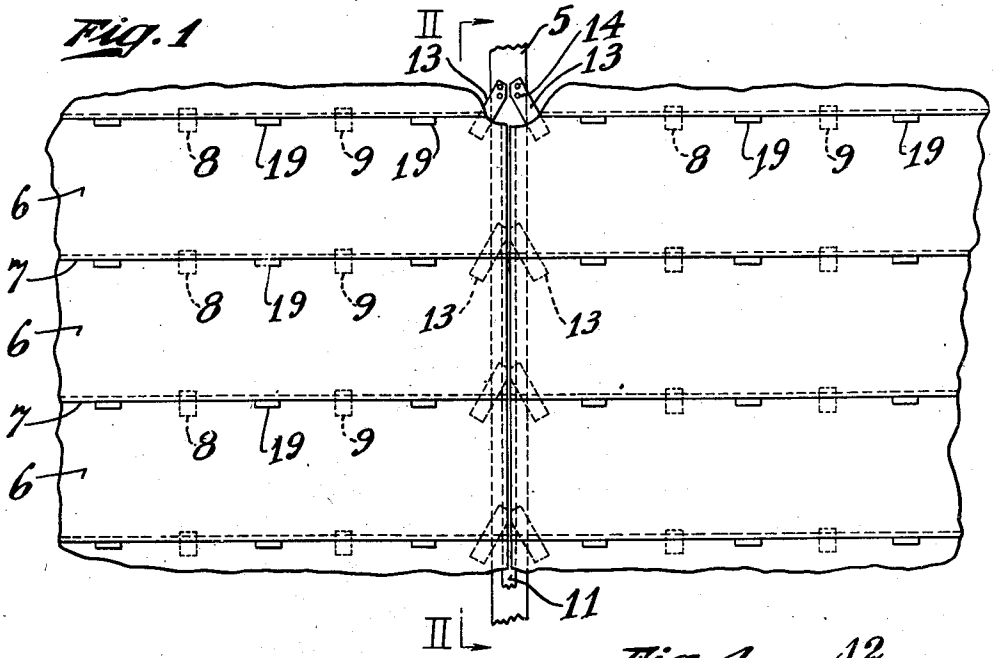


Fig. 2

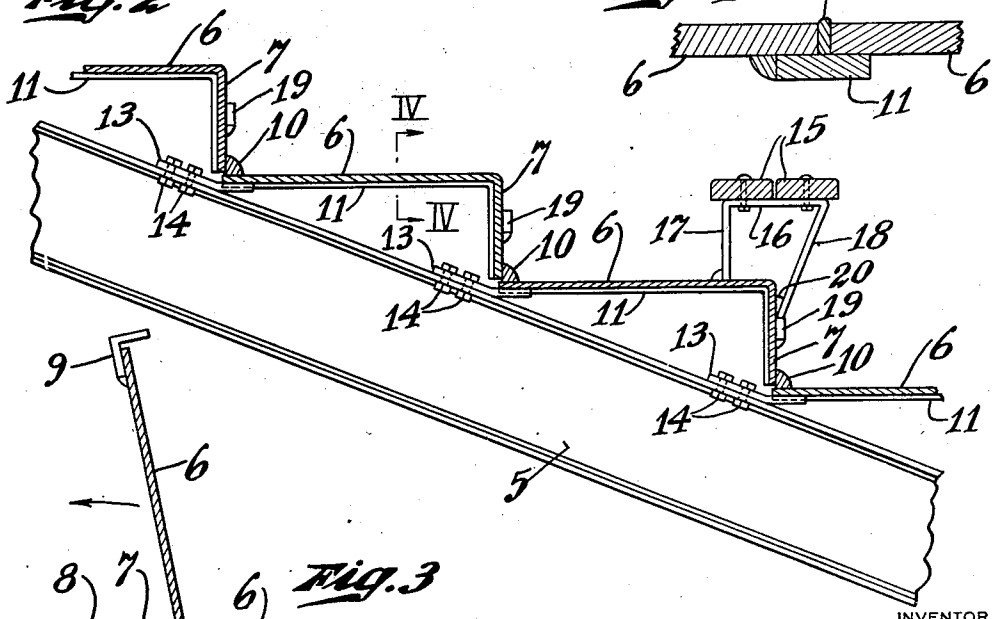
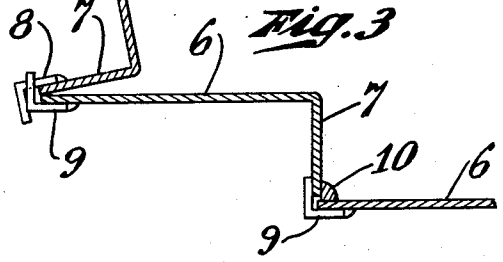


Fig. 4

Fig. 3



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FABRICATED METAL GRAND STAND

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5 Claims. (Cl. 189—1)

My invention relates to grand stands and like stepped structures having a decking of fabricated metal, and my objects are to simplify and improve the construction of such grand stand structures; to reduce to a minimum the field labor incidental to their erection; to provide a grand stand decking formed of welded plates which will be weather tight, thus making the space under the grand stand available for various uses; to provide a novel and improved interlocked and reinforced welded joint for connecting the deck plates to each other; and to equip the deck plates with welded attaching plates by which they may be bolted or riveted to their supporting frame work.

More particularly, my invention contemplates a novel method of preforming the deck plates and of attaching to them suitable elements which will facilitate the interlocking of these plates to assemble them in position to form the grand stand decking and to receive the field welding required to render said decking weather tight.

My invention further contemplates forming the decking of plates which are bent longitudinally thereof so that each forms a complete tread and riser and I shop weld at spaced intervals along top and bottom edges of each plate staggered angled lugs which enable the deck plates to be readily interlocked by a rocking movement imparted to one of the plates about a horizontal axis.

My invention further contemplates attaching along one end of each deck plate a splice plate adapted to underlie the end joint between adjacent deck plates which can thus be conveniently field welded.

My invention further contemplates each deck plate having welded to its under side attaching plates which stand clear thereof in position to engage and be bolted or riveted to the supporting frame work.

My invention further contemplates a simple and effective means for attachment by field welding of the seats to the deck plates. To this end each deck plate carries a number of short plate lugs welded along its riser portion and spaced and adapted to receive and be welded to the front leg of a seat bracket which has its rear leg welded to the deck plate's tread portion.

My invention further contemplates the novel details of construction and arrangements of parts, which in their preferred embodiment only are illustrated in the accompanying drawing, which forms a part of this specification, and in which:—

Fig. 1 is a fragmental plan view of a portion of a grand stand showing a plurality of deck plates assembled, but omitting the seats and seat supporting elements except short plate lugs for supporting seat brackets.

Fig. 2 is a vertical sectional view taken on the line II—II of Fig. 1, illustrating the manner of welding and assembling the decking to a typical supporting frame work, with one seat shown in cross section to illustrate the manner of its attachment.

Fig. 3 is a sectional view enlarged illustrating the manner of interlocking by angled lugs the horizontal top and bottom edges of the decking plates to hold them in predetermined relationship for the field weld joint and to reinforce such welded joint between points of support for the decking.

Fig. 4 is a sectional view taken on the line IV—IV of Fig. 2, illustrating the manner of forming the field welded end joints between deck plates.

Similar reference numerals refer to similar parts throughout the drawing.

While fabricated grand stands are now well known and have come into extensive commercial use, it has become important to devise a new and improved design for same and a better method of erection and fabrication to the end that as much work as possible can be done in the shops and as a result the cost of erection reduced to a minimum. My invention is not concerned with the supporting frame work provided for the metal decking and, therefore, it has seemed unnecessary to more than formally illustrate by the I-beam 5 an inclined decking support of a conventional type of structural frame work for a grand stand. This I-beam 5 is typical of any desired decking support whether of structural metal, concrete or other type of construction material that may be selected.

My invention is concerned especially with the manner in which the deck plates are shaped and equipped with interlocking and/or splice joint members to facilitate the assemblage and welding of these plates so as to form a continuous imperforate weather-proof metal decking to which seats may be readily and simply attached.

My decking is formed of a plurality of individual plates which are bent longitudinally so that each will provide one or more complete tread sections 6 and riser sections 7 of the grand stand.

Along the horizontal top and bottom edges of each deck plate I attach like angled lugs, those welded to the riser edge being designated by the numeral 8 and those welded to the tread edge by

the numeral 9. These lugs 9 have their upturned flange slightly spaced from, and rising substantially above, the adjacent edge of the tread 6. In like manner the lugs 8 have their out-turned angled ends spaced slightly more than the thickness of the plate tread from the bottom edge of the adjacent riser section 7 (see Fig. 3). Having applied the lugs in the manner described, and it being understood that the lugs 8 and 9 alternate along each horizontal deck joint and are spaced on suitable centers, as indicated in Fig. 1, they function to interlock the plates ready for the field weld as they are assembled in vertical tiers, as will be better understood by reference to Fig. 3.

The upper deck plate is shown in Fig. 3 with its riser portion 7 resting on the tread portion 6 of the next lower plate and is being rocked upwardly toward its operating portion in which its riser 7 will stand substantially perpendicular to the rear edge of the tread 6 of the plate below it and its lugs 8 will engage under such tread 6, while the lugs 9 on the latter will engage behind said riser 7. The rear edge of the tread will then be held substantially in contact with the bottom edge of the adjacent riser, leaving the corner joint 10 ready to be welded. The lugs 8 and 9 alternate along this joint and serve to interlock the plates and reinforce the joint when field welded.

Along the underface of one end edge of each deck plate I attach, preferably by a shop weld, a splice plate 11 bent to conform to the bend in the deck plate and extending from the top to the bottom edge thereof.

In Fig. 4 I show the abutting tread portions 6 of adjacent deck plates, the left hand plate having the splice plate 11 attached thereto and the right hand plate being shown overlapping this plate 11 and secured thereto and to the other deck plate by the field weld 12.

I shop weld to the underface of the deck plate treads, adjacent to their side joints which overlie the I-beam supports 5, a connecting plate 13 which is disposed so that one end thereof is laterally inclined to miss the splice plate 11 and overlie the I-beam to which it is connected by bolts or rivets 14 which engage in holes properly placed in the upper I-beam flanges. By this arrangement I avoid any holes being formed in the decking and yet I am able to secure same to its supporting beams, said connection being concealed from view after completion. I thus provide a readily assembled and mounted watertight grand stand decking.

In Fig. 2 I illustrate the manner of attaching the seats to the grand stand decking and I show the seats as comprising board members 15, connected by bolts or screws to the horizontal top element 16 of brackets each disposed parallel with the I-beams 5 and each has its rear leg 17 resting on a tread 6 and field welded thereto while its forward leg 18 extends downwardly below the tread 6 and rests upon its respective plate lug 19, preferably shop welded to the riser. Each seat supporting element bracket leg 18 is field welded at 20 to a bar 19 and a riser 7.

The lugs 8 and 9, being welded to horizontal and vertical joint members, will brace the assembled deck plates and prevent movement thereof in any direction after erecting and thereafter will continue to function in bracing and reinforcing the grand stand deck plates after they have been field welded. It will be apparent that the I-beams 5, having been previously drilled or punched to receive the bolts 14, and the lugs 8 and 9, the splice plates 11, the attaching plates 13, and the seat supporting bars 19 having all been fabricated and shop welded to the shaped deck plates before shipment to the job, there will remain but simple straight line weld work to be done in erecting the grand stand, such welding in field all being performed on the upper or exposed side of the decking, and by this means I not only reduce the labor required therefor to a minimum but I greatly minimize errors in construction and obtain an all metal grand stand free of any holes where leakage may occur.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications, without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon as are imposed by the prior art or as are specifically set forth in the appended claims.

What I claim is:—

1. A structure comprising a stepped decking formed by plates bent to form treads and risers, spot plates shop welded to the risers, and seat brackets each comprising a front leg field welded to its respective spot plate and having its rear leg field welded to the tread portion of a deck plate.

2. A decking unit for a grand stand comprising a metal plate bent to form a complete tread and riser, and right angled lugs spaced at intervals along the top and bottom edges of each unit remote from the ends thereof, each of said lugs having one leg welded to the underside of the unit and the other projecting in a direction to hook under the edge of an adjacent unit.

3. A decking unit for a grand stand comprising a metal plate bent to form a complete tread and riser, and right angled lugs spaced at intervals along the top and bottom edges of each unit intermediate the ends thereof, each of said lugs having one leg welded to the underside of the unit and the other projecting in a direction to hook under the edge of an adjacent unit, said lugs being in staggered relation with respect to each other.

4. A structure comprising a metal decking formed of a multiplicity of plates each of which is bent to form a complete tread and riser, inclined I beam supports for said decking, means for securing adjacent ends of the deck plates to the I beam supports, and angled lugs secured at intervals along the horizontal edges of the plates remote from the I beam supports and adapted to interlock the plates when assembled.

5. A structure comprising a metal decking formed of a multiplicity of plates each of which is bent to form a complete tread and riser, inclined I beam supports for said decking, assembling plates secured to the underside of adjacent ends of the deck plates and disposed to overlap and be secured to the top flanges of said I beam supports, and angled lugs secured at intervals along the horizontal edges of the plates remote from the I beam supports and adapted to interlock the plates when assembled.

WILLIAM N. WOODBURY.