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METALLIC STRUCTURE FOR FLOORS AND THE LIKE

Original Filed Nov. 5, 1956

3 Sheets-Sheet 1

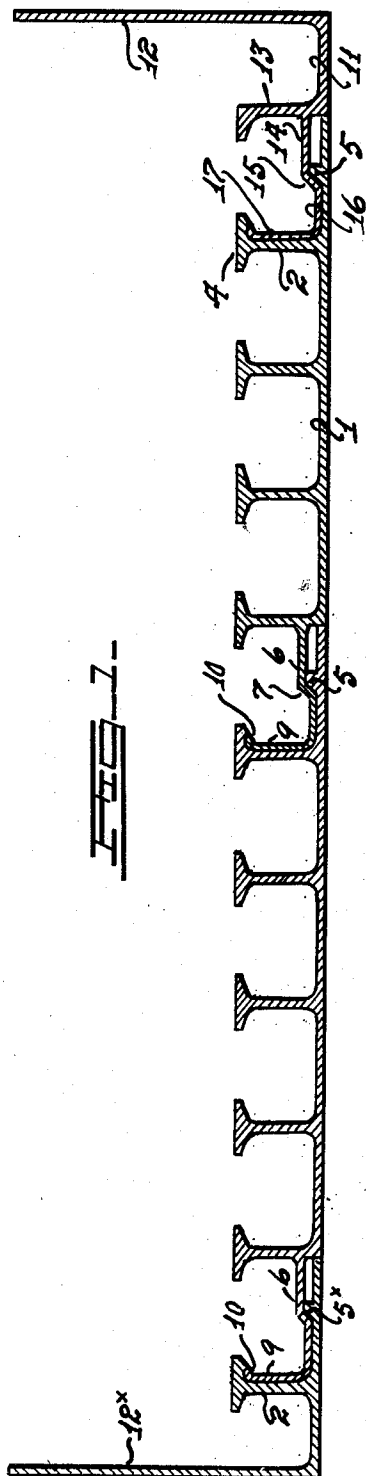


FIG. 1

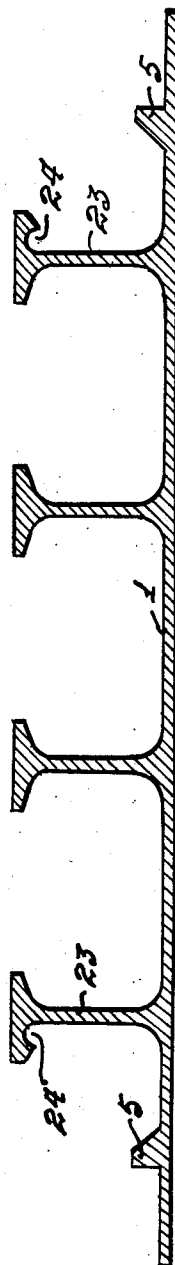


FIG. 2

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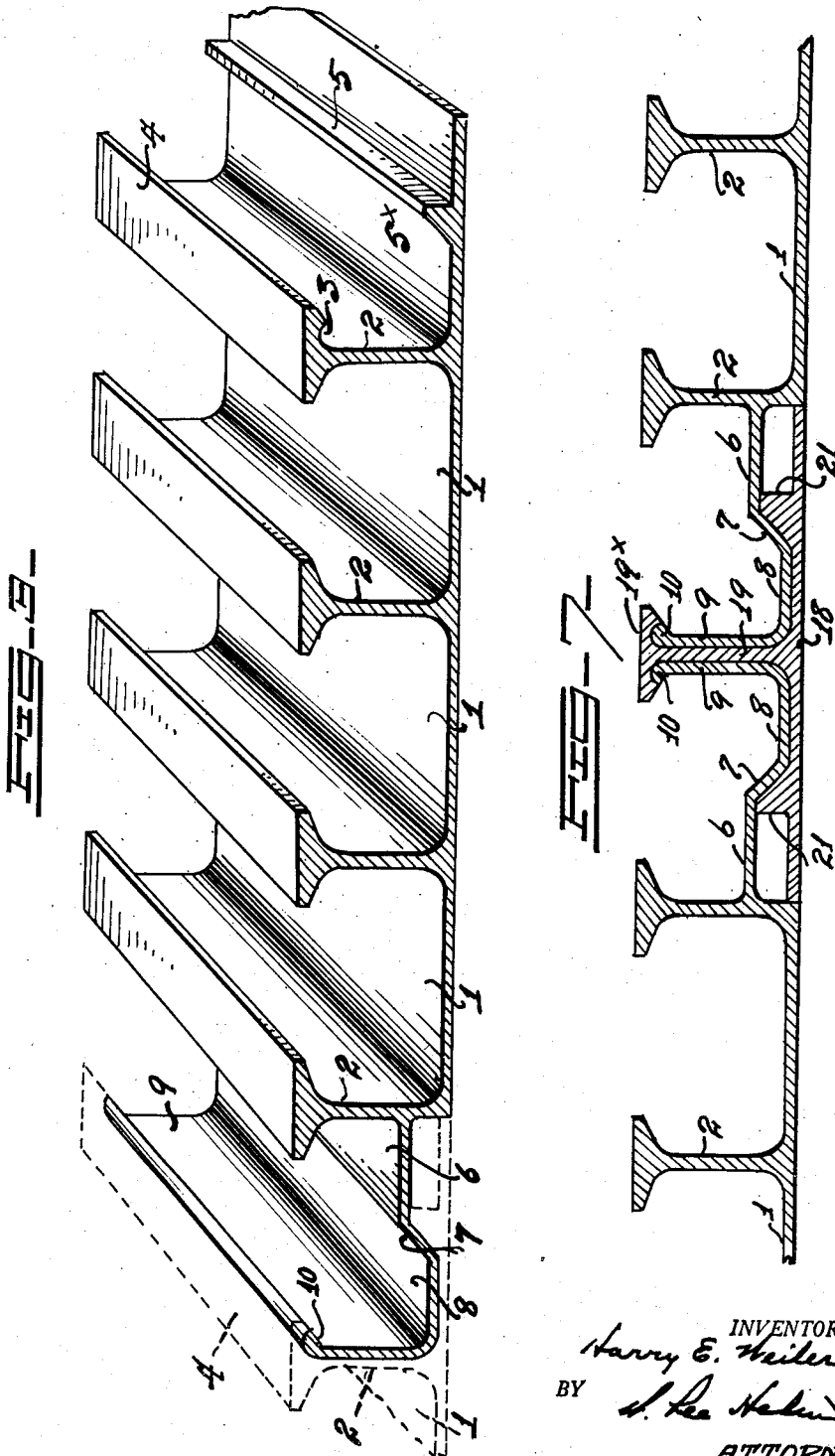
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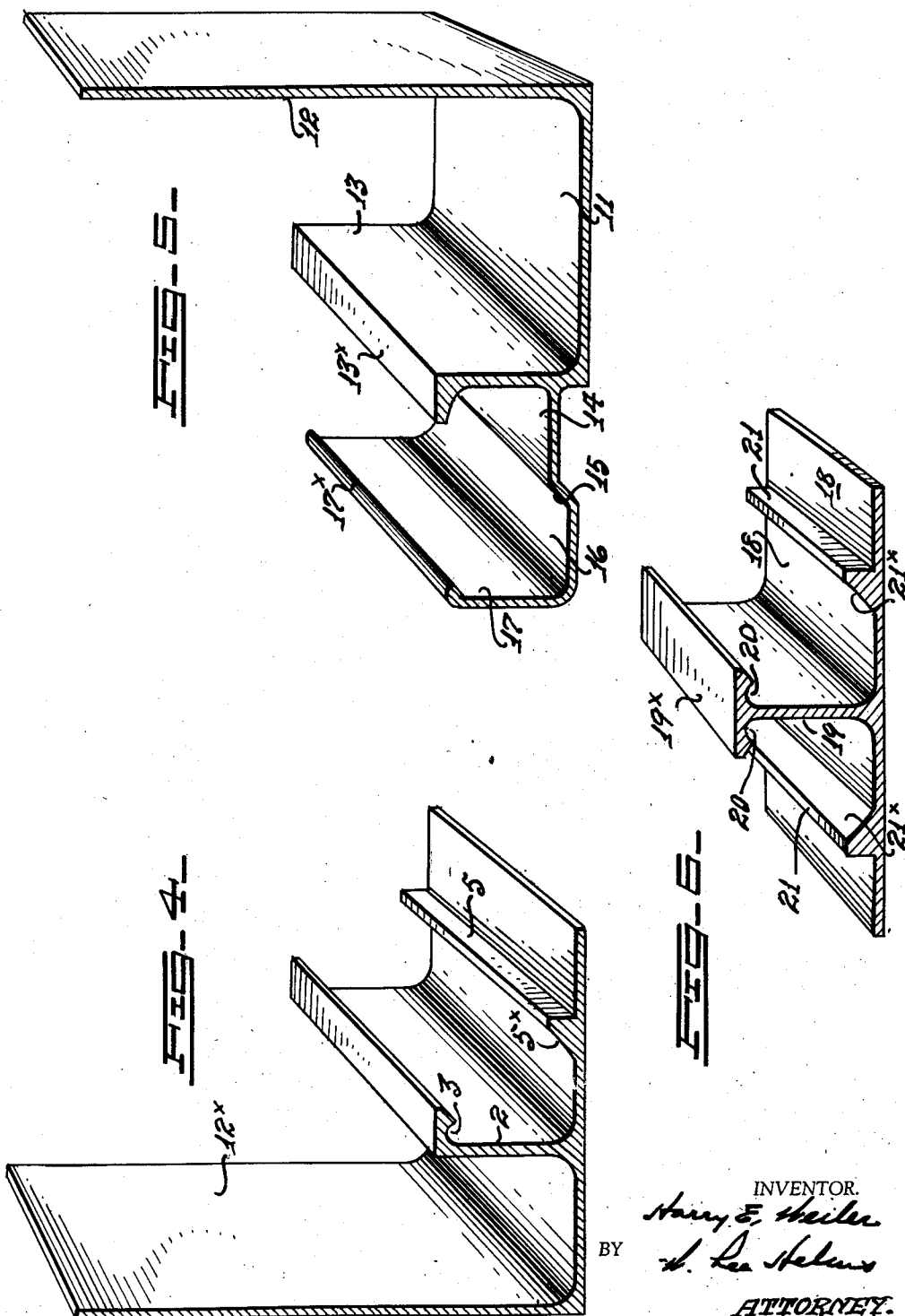
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3 Sheets-Sheet 3



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2,952,341

METALLIC STRUCTURE FOR FLOORS
AND THE LIKE

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Continuation of application Ser. No. 620,412, Nov. 5, 1956. This application July 13, 1959, Ser. No. 826,881

9 Claims. (Cl. 189—34)

The object of this invention is to provide a metallic structure for flooring or other surfacing purposes, particularly adapted for commercial vehicles wherein adequate air circulation under refrigerated loads is required. A characteristic of the invention is the provision of maximum air circulation space within the structure itself. Also the structure comprises a primary unit and associated units adapted to be mutually secured in a manner providing rigidity for the combination. A maximum ratio of load-bearing strength to weight is provided without the employment of corrugation, by providing, in the primary unit, and also in certain associated tying units, a flat, i.e., horizontal, load-bearing surface from which upwardly extend vertical ribs, at least the major number of the ribs merging into opposed flanges which partially close the spaces or channels between the ribs and which overhanging flanges provide a floor surface without excessively wide grooves. This application is a continuation of my now abandoned copending application Serial No. 620,412, filed November 5, 1956.

The invention will be described with reference to the accompanying drawings, in which:

Figure 1 is a transverse section through an assembly consisting of two primary floor units mutually tied and tied to coacting side wall units.

Figure 2 is a transverse section through a primary floor unit having like longitudinal margins.

Figure 3 is a perspective view, in transverse section, showing one of the primary units of Figure 1, dotted lines connecting the marginal fragment of a like unit.

Figure 4 is a perspective view, in section, of a side wall unit.

Figure 5 is a view similar to Figure 4, showing the side wall unit of that figure modified.

Figure 6 is a perspective view, in section, showing a tie unit to be employed in the manner shown in the succeeding figure.

Figure 7 is a transverse section broken away at its margins and showing two primary units tied, i.e., connected, by the units shown in Figure 6.

The construction now to be described as to the units thereof is particularly adapted for strong aluminum alloy extrusion. Figure 3 illustrates a preferred form of primary unit. It consists of a base wall 1 from which rises a plurality of ribs 2, the major number of the ribs carrying at their tops opposed laterally-projecting load-carrying flanges, so that each rib with its top is T-shaped. The T-shaped top of each rib overlies channels between the ribs, and said channels are open for free circulation of the air. In the structure of Figure 3 means integral with the margins of the structure is provided for rigidly tying together two like members when they are brought together in reverse position. For such purpose the margins of the said structure are differently formed as now to be described.

Referring to the right-hand margin of Figure 3, it will be seen that a relatively deep rounded channel or groove

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3 is formed in the under-surface of the load-carrying rib top 4, the latter being made up of the opposed flanges at the top of the rib. This channel extends longitudinally of member 4. Rising from base member 1, in outwardly spaced relation to the outer rib 2, and extending longitudinally thereof is a short rib 5 preferably having its inner wall 5^x downwardly inclined. At the opposite margin of the structure the outermost flanged rib 2 carries a raised horizontal wall 6, the latter outwardly merging into a downwardly inclined extension 7 which carries a generally L-shaped extension consisting of horizontal wall 8 and vertical wall 9, the top of which has a bead or rounded nose 10.

Wall 8 is raised to a degree equivalent to the thickness of the base wall 1. In the assembly of two like units of the structure shown in Figure 3 they are abutted and as indicated by dotted lines in that figure the reverse margins may be interlocked, with wall 8 of the first unit resting on the base wall of the second unit, wall 7 of the first unit abutting the inclined base 5^x of rib 5 of the second unit, and nose 10 of the first unit seated in groove 3 of the coacting unit.

In Figure 1 the said two interlocked units are shown as interlocked with side wall or "flashing" units. Referring to the right-hand side wall unit, it consists of a base wall 11 from which, rising to a degree required for flashing, is a vertical wall 12 spaced from a rib 13 which may have opposed flanges or the single left-hand flange shown in the figure. Rib 13 carries a raised horizontal wall 14 merging into a downwardly inclined wall 15 which, in turn, carries the slightly raised horizontal wall 16, at the lower end of a vertical member 17 having a rounded nose 17^x at its top to enter the channel 3 of the coacting unit shown in Figure 3. Except for its relatively deep vertical wall 12^x the left-hand side wall member of Figure 1 is formed exactly the same as the right-hand end of Figure 3 and requires no further description. It is shown more clearly in Figure 4 and those elements which are the same for interlocking as those at the right-hand end of Figure 3 bear the same numerals.

In some cases it may be desirable to reverse the positions of two like units for interlocking. In such case the tie member shown in Figure 6 may be employed. In that tie member the base wall 18 carries a central upstanding rib 19 having a load-bearing top 19^x formed by opposed flanges, each flange having an underlying longitudinal channel or groove at 20. At each side of rib 19 and spaced therefrom is a shallow rib 21 having an inner downwardly inclined wall 21^x. Thus when two like units are reversed in position their vertical walls 9 may abut the opposite faces of the connector wall 19 with the bead or nose 10 of each wall 9 in its appropriate channel 20 of the connector, as shown in Figure 7.

When the like units are reversed in the manner shown in Figure 7 each margin of the assembled structure will be like that at the right-hand end of Figure 3, and two of the side wall members shown in Figure 5 will interlock with the margins of the assembled primary structure, when required.

The modified primary unit shown in Figure 2 is adapted to receive either additional primary members of the structure of Figure 3, the left-hand added member being reversed, or to receive two of the side wall members according to Figure 3, one being reversed. For this purpose in Figure 2 each of the outermost ribs 23 carries at its top opposed flanges which merge to form a flat load-supporting surface and in each case the outermost flange is formed with a channel at 24 to receive the nose 10 of the unit shown in Figure 3 or the nose 17^x of the side wall unit shown in Figure 5, and at each margin the structure of Figure 2 carries within the margin the same shal-

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low rib shown at 5 in Figure 3 and for the same purpose.

It will be understood that various modifications may be made in the forms and arrangements of the elements illustrated in the drawings, without departing from the spirit of the invention.

I claim:

1. A metallic structural member adapted for flooring in truck, railway cars, and the like, consisting of a base wall from which rise between its lateral margins a plurality of spaced vertically extending ribs, each of a plurality of said ribs being formed at its top with opposed laterally projecting load-carrying flanges overlying channels, said member being formed near one margin thereof with an outermost straight rib having an outwardly extending top flange section formed with an underlying seat adjacent a downwardly extending wall of the rib which terminates at the top of the base wall, the base wall extending outwardly from said rib wall in straight formation at top and bottom and having at said extension an intermediate upwardly extending short rib having inwardly thereof an inclined face, the opposite margin of said structural member carrying inwardly thereof a rib upwardly extending from the base wall, said rib integrally carrying a web which has four sections, the first web section being a wall member substantially parallel with the base wall, the second section extending downwardly from the first section at an outwardly directed angle, the third section extending outwardly in parallelism with the base wall, and the fourth section extending substantially at right angles to the third section and parallel with the rib at the opposite margin of the member and having a length equivalent to the length of said rib, the base walls of two like members, reversely arranged and marginally interfitted being adapted for lying flat in line, with the said interfitted members above the base walls.

2. At least two panel-like extruded metal sections adapted to be interlocked along their side edges to provide at least a portion of a floor having upstanding parallel single-wall ribs provided with flat load-bearing tops and separated by channels, one of said sections having along one side an upstanding single-wall rib provided with a load-bearing flat top, said top having a lip along its outer edge overhanging the outer side of said rib and provided in its undersurface with a longitudinal groove-like rounded seat, a flange-like lateral extension on the outer side of said rib at its base, said extension having a flat bearing undersurface and an upstanding rib shorter than and extending in spaced parallel relation to said first-mentioned rib to define therebetween a shallow channel, the other of said sections having along one side an upstanding single-wall rib provided with a load-bearing flat top, a flange-like lateral extension on the outer side of said last-mentioned rib above its base, said extension having at its outer edge an upright flange terminating at its upper edge in a rounded nose complementary to and for pivotal engagement within said seat on said one section during assembly of said sections, said flange and an outer portion of said last-mentioned extension being complementary and having surfaces conforming respectively to the outer side of said one section rib and said shallow depression, for snug engagement therewith when said sections are assembled, the construction and arrangement of said sections being such that said nose can be engaged in said seat with said other section tilted up from said one side of said one section and then said other section pivoted down about said seat to bring said conforming surfaces into their said snug engagement.

3. The structure defined in claim 2 in which the inner surface of the shorter rib is inclined downwardly and inwardly.

4. The structure defined in claim 2 in which the extension on the one section extends outwardly beyond the shorter rib.

5. At least two panel-like extruded metal sections adapted to be interlocked along their side edges to pro-

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vide at least a portion of a floor having upstanding parallel single-wall ribs provided with load-bearing flat tops and separated by channels, each of said sections including a base panel provided with upstanding parallel, single-wall ribs having flat load-bearing tops and separated by channels for air circulation and drainage, one of said sections terminating at one side in a side edge of its base panel with one of said ribs spaced inwardly of said panel edge, the top of said one rib having an overhanging lip along its outer edge, said lip being provided in its undersurface with a longitudinal groove-like rounded seat, a shorter rib upstanding from said one section base panel outwardly of and in spaced parallel relation to said one rib, the other of said sections terminating at one side in one of its said ribs, a flange-like lateral extension on the outer side of said last-mentioned rib above the base panel of said other section, said extension having an outer portion complementary to and provided with surfaces conforming to those on the one section between the top of said short rib and said seat for snug overlying engagement therewith when said sections are assembled, said extension terminating in a rounded edge of an upstanding flange, said rounded edge being complementary to and adapted for pivotal engagement within said seat during assembly of said sections, the construction and arrangement of said sections being such that said rounded edge can be engaged within said seat with said other section tilted up from said one side of said one section, and then said other section pivoted down about said seat to bring said conforming surfaces into their said snug engagement.

6. The structure defined in claim 5 in which the inner side of the short rib is inclined downwardly and inwardly.

7. The structure defined in claim 5 in which the short rib is spaced inwardly of the panel edge.

8. At least two panel-like extruded sections adapted to be interlocked along their side edges to provide at least a portion of a floor having upstanding parallel single-wall ribs provided with flat load-bearing tops and separated by channels, one of said sections having along one side an upstanding single-wall rib provided with a load-bearing flat top, said rib having along its outer side an overhanging flange provided in its undersurface with a longitudinal groove-like rounded seat, a flange-like lateral extension on the outer side of said rib at its base, said extension having a substantially flat bearing undersurface and an upstanding rib shorter than and extending in spaced parallel relation to said first-mentioned rib to define therebetween a shallow channel, the other of said sections having along one side an upstanding single-wall rib provided with a load-bearing flat top, a flange-like lateral extension on the outer side of said last-mentioned rib above its base, said last-mentioned extension being provided at its outer edge with an upright flange-like portion terminating at its upper edge in a rounded nose substantially complementary to and for pivotal engagement within said seat on said one section during assembly of said sections, said flange-like portion and an outer portion of said last-mentioned extension being complementary and having surfaces conforming respectively to the outer side of said one section rib below said seat and said shallow channel, for snug engagement therewith when said sections are assembled, the construction and arrangement of said sections being such that said nose can be engaged in said seat with said sections tilted relative to each other and then said sections relatively rotated about said engagement into generally coplanar disposition to bring said conforming surfaces into their snug engagement.

9. At least two panel-like extruded sections adapted to be interlocked along their side edges to provide at least a portion of a floor having upstanding parallel single-wall ribs provided with flat load-bearing tops and separated by channels, each of said sections including a

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base panel provided with upstanding parallel, single-wall ribs having flat load-bearing tops and separated by channels for air circulation and drainage, one of said sections terminating at one side in a side edge of its base panel with one of said ribs spaced inwardly of said panel edge, said one rib having along its outer side an overhanging flange provided in its undersurface with a longitudinal groove-like rounded seat, a shorter rib upstanding from said one section base panel outwardly of and in spaced parallel relation to said one rib, the other of said sections terminating at one side in one of its said ribs, a flange-like lateral extension on the outer side of said last-mentioned rib above the base panel of said other section, said extension having an outer portion complementary to and provided with surfaces

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conforming to those on the one section between the top of said short rib and said seat for snug overlying engagement therewith when said sections are assembled, said extension terminating in a rounded edge of an upstanding flange, said rounded edge being complementary to and adapted for pivotal engagement within said seat during assembly of said sections, the construction and arrangement of said sections being such that said rounded edge can be engaged within said seat with said sections tilted relative to each other, and then said sections relatively rotated about said engagement into generally coplanar disposition to bring said conforming surfaces into their snug engagement.

No references cited.