Jan. 21, 1958 W. H. PETERSON 2,820,422

RAILWAY CAR FLOOR

Filed Feb. 7, 1952 3 Sheets-Sheet 1

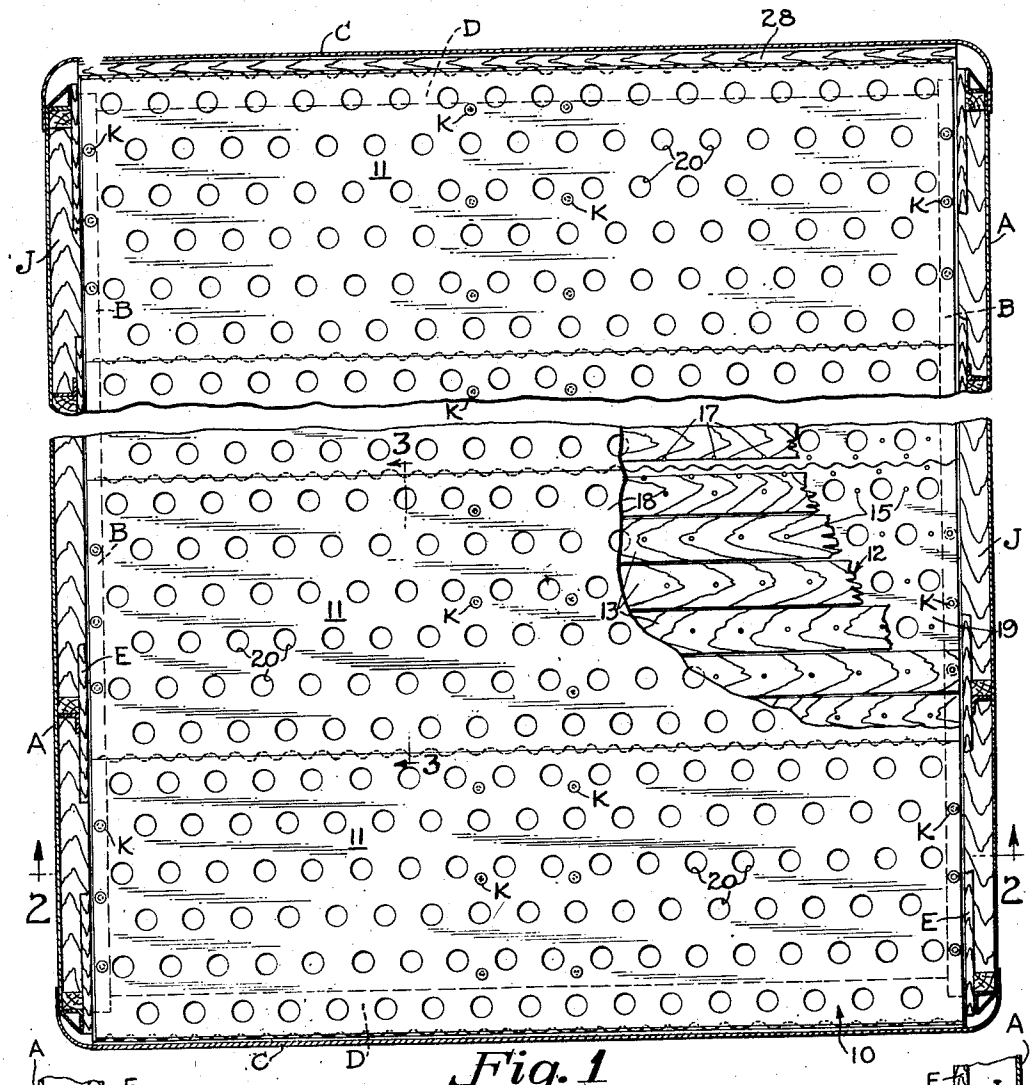


Fig. 1

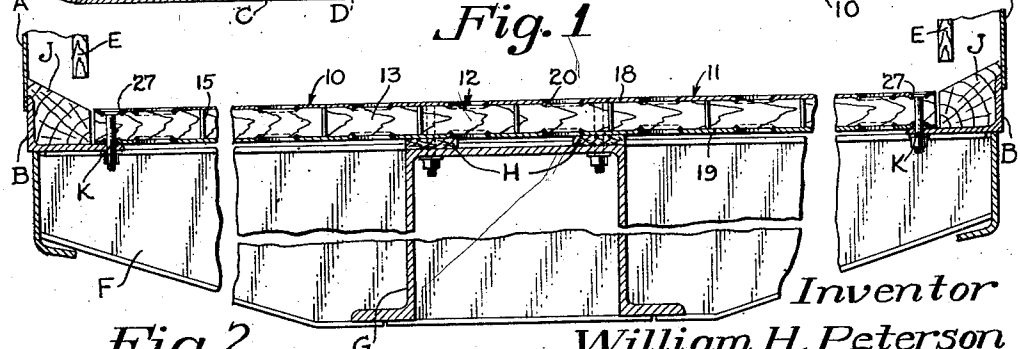


Fig. 2

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RAILWAY CAR FLOOR

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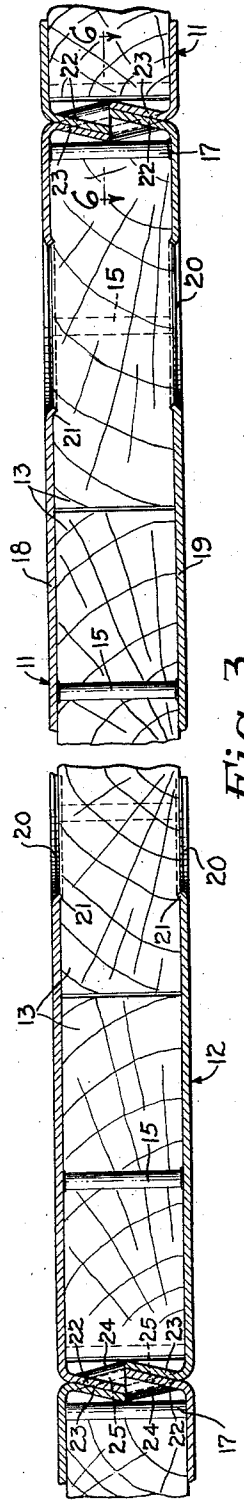


Fig. 3

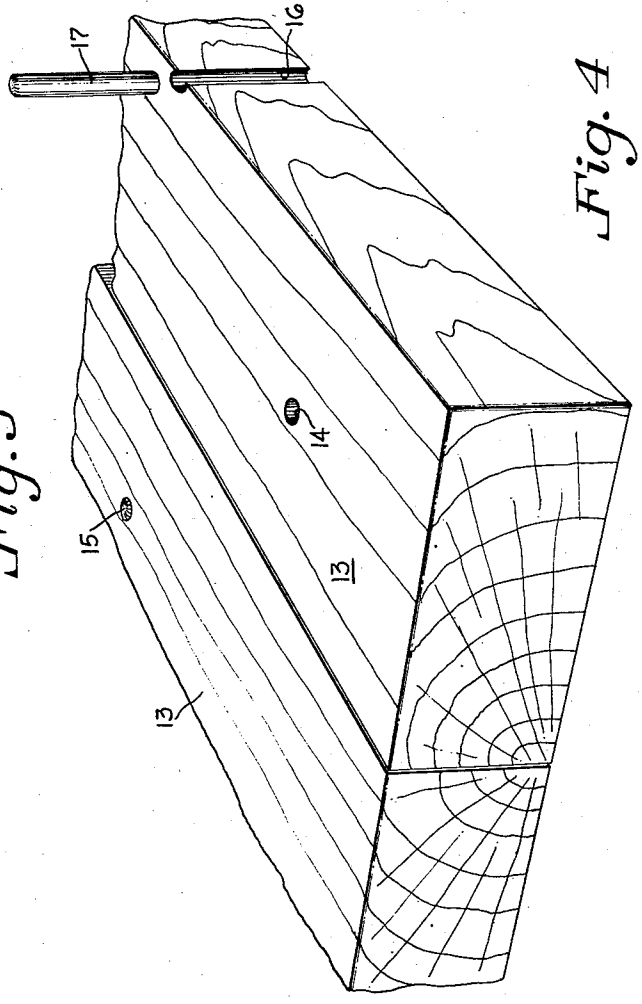


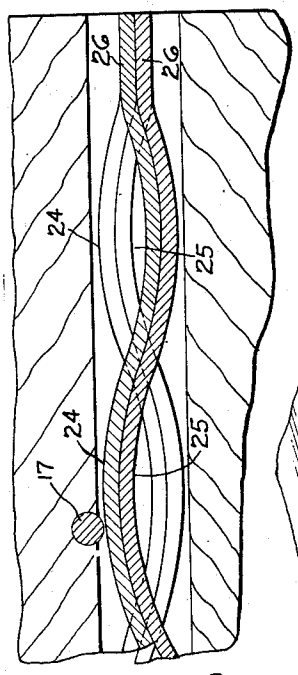
Fig. 4

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RAILWAY CAR FLOOR

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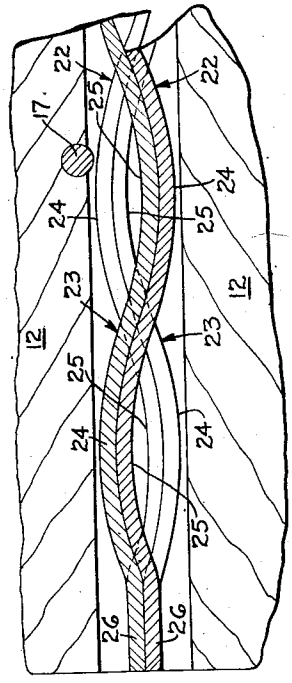


Fig. 6

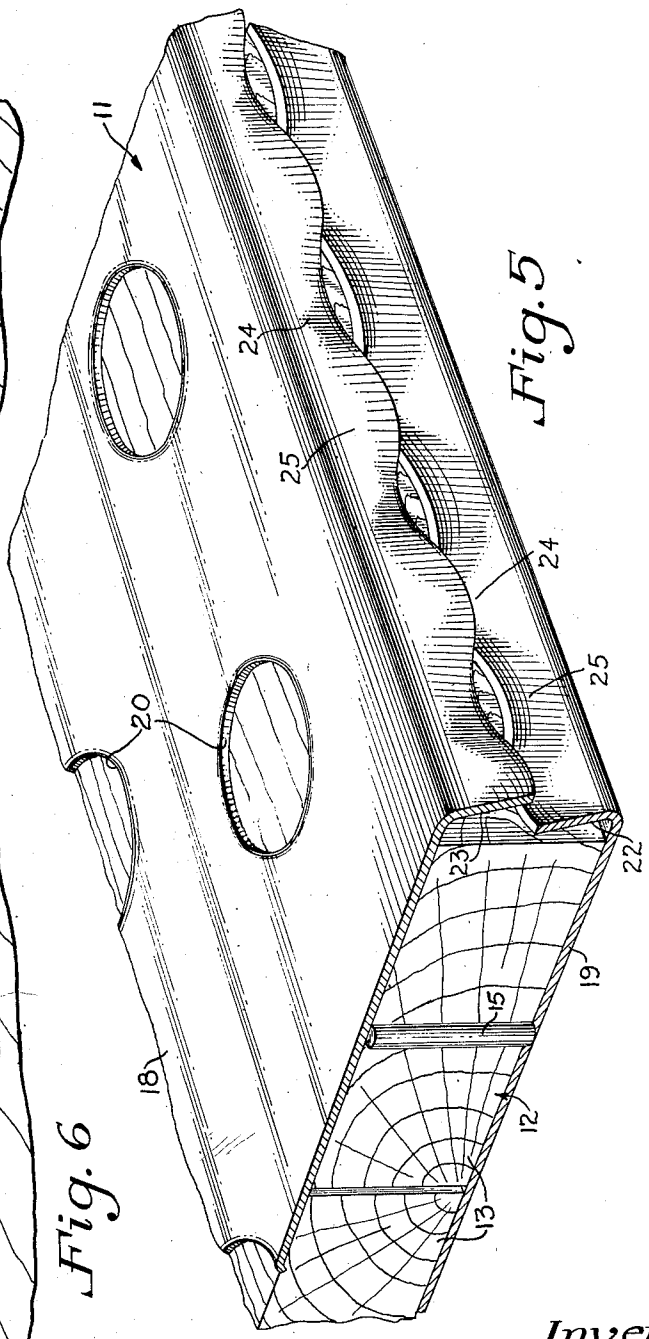


Fig. 5

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2,820,422

RAILWAY CAR FLOOR

William H. Peterson, Homewood, Ill., assignor to Pullman-Standard Car Manufacturing Company, Chicago, Ill., a corporation of Delaware

Application February 7, 1952, Serial No. 270,444

10 Claims. (Cl. 105—422)

The present invention relates to an armored or sheathed plank or panel adapted for use in railway car floors or walls or like application, and more particularly to such an armored plank having the sheathing and core secured in a novel manner and provided with edge formations for interlocking with similar planks to prevent relative movement out of the plane thereof.

In the embodiment of the invention disclosed herein, the plank comprises a wooden core provided by a number of boards or the like arranged edge to edge and each extending the full length of the plank, with a pair of metal plates overlying the opposite faces of the core and secured in close contact therewith by metal pins extending through the core and welded at their ends to the inner faces of the plates. The boards of the core are provided with apertures in which the pins are frictionally held during the assembly operation, suitably distributed over the plank. Along each side, the plank is provided with what may be termed a buttress edge having longitudinally alternating projections directed toward opposite faces of the plank which interlock with the projections of planks disposed adjacent thereto so as to prevent movement of the planks out of the plane in which they are disposed. This interlocking buttress edge is formed by sinuous flanges of the metal sheathing plates which extend toward each other along the side edge of the core for substantially half the core thickness, each flange substantially throughout its length having alternate portions inclined in opposite directions from the plate edge toward and from the core side edge with the outwardly inclined portions of one flange disposed opposite the inwardly inclined portions of the other, the flanges crossing each other at points between the oppositely extending portion of each with their edges abutting at such points. This flange formation leaves the side edges of the plank substantially as flexible as the remainder thereof, so that bending stress concentrations at the sides are avoided, and provides buttress edges interlocking with the edges of adjacent planks so that each plank is held by another against relative movement out of its plane, or in other words has bending load transmitting engagement therewith. The sheathing plates are formed with spaced apertures to expose the core faces at intervals so that nails, screws, or the like may be secured to the boards, as for the securement of lading to a railway car floor or wall. These apertures are formed with peripheral burrs which are embedded in the core to seal the interfaces of the core and plates from the apertures.

The armored floor plank possesses great strength as a structural member or panel, requires only relatively inexpensive materials such as low-grade steel and rough lumber, makes unnecessary accurate fitting of the core boards, permits use of relatively simple machinery and fabricating techniques, is readily repaired, and lends itself to a novel method of fabrication.

One object of the invention is to provide an armored plank having a buttress side edge formed to interlock with a corresponding edge of a similar plank so that movement of either plank out of its plane relative to the other is prevented and bending loads on one plank are transmitted to the other.

Another object is the provision of an armored plank having flanges of sheathing plates extending over side edges of the core so formed as to avoid imparting substantially greater rigidity to the plank at its sides than in the remainder thereof.

Another object is the provision of a railway car floor or the like formed of a plurality of armored planks each having buttress edges interlocking with adjacent planks to prevent relative movement of the planks out of their planes and thus transmit bending loads from one to another.

It is also an object to provide a railway car floor or the like formed by a plurality of armored planks having interlocking adjacent edges of substantially the same flexibility as the remainder thereof so as to prevent concentration of bending stresses at such edges and consequent permanent deformation thereof under load.

A further object is the provision of an armored plank having metallic sheathing plates overlying opposite faces of a non-metallic core secured to the ends of pin members extending through the core and frictionally held in desired position by the core during fabrication of the plank.

Still another object of the invention is the provision of a novel method of forming and armored plank having a non-metallic core and metallic sheathing plates overlying opposite faces thereof secured by welding to the ends of metal pin members extending through the core held in desired position by the core during the welding operation.

Other and further objects, advantages, and features of the invention will be apparent to those skilled in the art from the following description and the accompanying drawings, in which:

Fig. 1 is a broken horizontal section through a railway car, showing a floor formed of armored planks according to this invention, with certain parts broken away for greater clearness:

Fig. 2 is an enlarged broken transverse section taken substantially as indicated by the lines 2—2 of Fig. 1, and showing the relation of the floor to the underframe;

Fig. 3 is an enlarged broken longitudinal section through a portion of the floor taken substanitally as indicated by the line 3—3 of Fig. 1;

Fig. 4 is an enlarged fragmentary perspective view of a portion of the plank core;

Fig. 5 is an enlarged fragmentary perspective view of a portion of one of the planks; and

Fig. 6 is an enlarged broken horizontal sectional view taken substantially as indicated by the line 6—6 of Fig. 3.

Referring particularly to Figs. 1 and 2 of the drawings, the invention is illustrated as embodied in the floor 10 of a railway box car having side walls A and side sills B, end walls C and end sills D, and inner sheathing or lining E, shown only at the sides of the car but which may also be provided at the ends. The floor is provided by a number of armored planks 11. The sills B and D are suitable angle members having one flange vertical and the other horizontal and extending inwardly of the car. The side sills B are secured to the ends of a crossbearer F by their horizontal flanges, and similarly to other members, not shown of the car underframe, such as the usual body bolsters. The cross-bearers and other transverse members of the underframe are connected to a center sill G of any suitable type, on the upper surface of which are secured the usual floor nailing of furring strips H. On the side sills are disposed wooden grain strips J, extending upwardly between the lining and walls, and similar grain strips may be provided at the ends of the car.

Floor supporting stringers of any suitable type may be employed if desired, but are not shown because the armored plank of this invention is of such strength that the stringers may be dispensed with. The planks **11** are disposed with their ends supported on the horizontal flanges of the side sills B, to which they may be secured by bolts K as shown or in any other suitable manner, for example by floor clips such as those disclosed in Patent No. 2,439,220, dated April 6, 1948, to O. E. Rothfuchs. The planks may similarly be bolted to the center sill. The planks are of a length approximating the interior width of the car, and of a width such that a predetermined number laid side by side extend substantially the interior length of the car. To facilitate installation and allow for an actual car length less than the nominal length, the planks may be dimensioned to provide a floor slightly shorter than the assumed length of the car, and a suitable filler strip employed to close any gap between the floor and one of the end walls.

In the present embodiment of the invention, each of the planks **11** comprises a wooden core **12** formed of a number of boards **13** or the like extending the full length of the plank and disposed side by side, each of the boards having a series of spaced bores or apertures **14** extending therethrough from one face to the other and which receive with a good frictional fit suitable metal pins **15** the ends of which initially project slightly beyond the opposite faces of the core **12**, as best shown in Fig. 4. The locations of the apertures are suitably spaced apart, for example by arrangement in staggered rows as shown, to obtain a substantially uniform distribution of the pins throughout the extent of the core. Along the side edges of the outermost boards **13**, or in other words the side edges of the core **12**, are notches **16** identical to the apertures **14** except for being open along their length at the sides of the core, as will be clear from Fig. 4. In the notches **16** are disposed pins **17** substantially identical to the pins **15**. In the completed plank, the pins **15** and **17** have their ends substantially flush with the core faces, being reduced in length to the thickness of the core in the formation of the plank, as hereafter more fully explained. Suitable holes for the securing bolts K are provided at the ends of the core. The boards **13** need not be finished, may be of varying widths, and do not require tonguing and grooving or the like because they do not have to be interfitted. Spaces may be provided between the boards, as shown, to allow for board roughness and variations in the total board width while maintaining the desired width of the core.

A pair of metallic sheathing plates **18** and **19** slightly wider than the core **12** are secured in close contact with the opposite faces of the core by welding to the ends of the pins. The plates are formed with a plurality of apertures **20** therein suitably distributed throughout their extent and so located as not to extend over any of the pins **15** or **17**. On the inner face of the plates, a peripheral burr **21** is formed about each aperture **20** which is embedded in or bites into the core so as to seal the interface of the plate and core. The inner faces of the plates are preferably coated with asphalt paint or the like as protection against corrosion, and the outer faces may also be suitably painted or coated. The apertures of each plate are arranged in registration with those of the other plate so that bolts or similar means may extend entirely through the core. Along one side of each plate is a flange **22**, and along the other side extends a similar flange **23**, each of a width substantially half the thickness of the core. Each flange is corrugated along substantially its entire length so that alternate adjacent portions **24** and **25** thereof, generally conoidal in shape, are oppositely inclined from the edge of the plate respectively toward and from the adjacent side edge of the core. In other words, the flange is repeatedly or continuously reversely curved throughout its length and substantially

none of the flange extends in a plane normal to the plate along the plate edge, except for the ends. The flanges **22** and **23** are formed exactly parallel to each other, each inwardly extending portion **24** being directly opposite a similar portion **24** of the other flange, transversely of the plate, and the outwardly extending portions **25** of the two flanges similarly being opposite each other. The terminal bent portions in this instance are not at the ends of the flange, but as best shown in Fig. 6 merge into short flat end portions **26** perpendicular to the plate at its edge, or the longitudinal mid-plane of the flange. An even number of the portions **24** and **25** is formed in the flange so that the terminal bent portions at opposite ends of each flange are oppositely or reversely disposed relative to each other, that is, they extend in opposite directions to the midplane of the flange. Of course, the bent portions may terminate elsewhere than at the midplane of the flange, with the flat end portions **26** offset oppositely and equally from the midplane, or the end portions **26** may be omitted, but in any case the terminal bent portions are oppositely disposed and terminate at corresponding points relative to the flange midplane. The inclined portions **24** and **25**, while preferably of curved or conoidal shape, may take other forms if desired. The apertures **20** are preferably punched by oversize dies as a simple manner of providing the burrs **21** and simultaneously giving a smooth edge around each aperture at the outer face of the plate. Each plate is also provided with countersunk apertures **27** adjacent its ends for registration with the bolt holes of the core **12**. The plates **18** and **19** are identical, and may be formed by the same dies or other apparatus.

The plates **18** and **19** are disposed reversely to each other when assembled with the core **12** so that the flanges substantially cover the side edges of the core, but the flange **22** of one plate is disposed in opposed and abutting relation to the flange **23** of the other plate. Since the flanges are identical, such reversal results in the inwardly inclined portions **24** of each flange being disposed opposite the outwardly inclined portions **25** of the opposed flange along each side of the plank **11**, as shown in Fig. 5. The outwardly inclined portions provide abutments or buttress projections with abutment surfaces at the midplane of the plank facing or directed toward the opposite faces of the plank, that is, the planes of the plates opposite those on which the projections are formed, each projection being adjacent another projection along the side of the plank but alternate projections facing oppositely. Thus at each side of the plank, the outwardly bent portions **25** of flange **22** or **23** of plate **18** form abutments facing toward the plane of plate **19**, while the portions **25** of flange **23** or **22**, respectively, of plate **19** provide similar abutments facing toward the plane of plate **18**, the abutments afforded by one plate alternating with those of the other plate along the side edge of the plank. The projections on opposite sides of the plank are disposed in pairs transversely of the plank, the projections of each transverse pair having the abutment surfaces directed oppositely, as will appear from Fig. 3. The inwardly bent portions **24** of the flanges provide recesses along the side edges of the plank, as will be obvious and as clearly shown in Fig. 5, which correspond in shape to the projections. By reason of the repeatedly or continuously reversely bent formation of the flanges, the edges of the opposed flanges **22** and **23** at each side of the plank **11** repeatedly cross and engage or abut each other at the points of merger between the reversely curved portions **24** and **25** of each, substantially in the midplane of the flanges, as shown in Figs. 5 and 6. Both the projections and recesses, or more accurately the portions **24** and **25** defining them, are of greater extent at the flange edges than at the bases of the flanges, or edges of the plates, the metal of the flanges "stretching" or flowing during the forming operation to permit the portions **24** and **25** to assume the conoidal shape shown. The smoothly merg-

ing curvature of the reversely bent portions 24 and 25 disclosed substantially eliminates the possibility of failure due to such stretching or flow of the flange metal, and is preferred over flange formations with sharply curved or angularly bent portions. By reason of the continuously reversely bent formation of the flanges, the side edges of the plank are not appreciably rigidified and the plank is of substantially uniform flexibility throughout its extent while the sides of the core are protected. The spaces between the core side edges and the flanges may be filled with a suitable mastic material or the like to protect the core against moisture or deleterious foreign matter. It is to be noted that the pins 17 are located as closely as possible to the flanges at each side so as to prevent separation of the flanges.

In fabricating the plank, the core boards 13 are arranged side by side to form the core 12, which is disposed between the plates 18 and 19 with the pins 15 and 17 positioned in the apertures 14 and notches 16 and spacing the plates from the core faces. Electric current is passed through the plates and pins to secure them together by resistance welding, the plates being pressed toward the core to mushroom the pins slightly and reduce their length to the thickness of the core as the pin ends are softened by the welding current. The plates are thus brought into close contact with the faces of the core and their opposed flanges placed in abutting relation at the plank sides, the ends of the pins becoming substantially flush with the core faces and the burrs 21 being pressed into the core, while the countersunk portions of the plates about the bolt apertures 27 enter the ends of the bolt holes in the core. The core 12 serves to locate the pins and maintain them in desired position during the welding operation, making unnecessary the use of complex jigs or fixtures. After the welding operation, the plank 11 is complete except for the application of sealing material if that is to be used. The welding may be done in any desired manner, either manually or by a suitable machine, with either one or more of the pins being welded at one time. The circular cross section of the pins conduces to economical maintenance of the necessary current density in welding.

The floor 10 is provided by disposing a number of the planks 11 side by side with their ends secured to the side sills as already described and their side edges interlocked by reason of the buttress formation. The planks 11 are substantially identical and are adapted to engage properly whether the planks are turned upside down or end for end. The upper sheathing plates 18 of adjacent planks in the floor correspond to each other and the lower sheathing plates 19 also correspond to each other, but the upper and lower plates of the planks in such floor are noncorresponding with respect to the location of the plates relative to the respective planks of which they form parts. The projecting portions 25 of one flange 22 of each plank are nestedly received in the recessed portions 24 of flange 23 of the adjacent plank (Figs. 3 and 6), so that the projections of one plank facing in one direction oppose and abut the projections of the adjacent plank which face in the other direction. This prevents relative movement of either plank out of its plane in either direction, any load tending to cause such relative movement being transmitted to an adjacent plank by the buttress edge structure so that deflection of one plank relative to another is avoided. In laying the floor, one of the planks 11 is put in place at one end of the car, the next is placed in position beside the first with the side edges interlocked, and so on until the other end of the car is reached, the gap between the last plank laid and the adjacent end wall being closed by a wooden filler strip 28 or the like. The provision of such a gap facilitates placing the last plank in position, allows for slight variations from the nominal car length, and permits of slight differences in the closeness of engagement between the planks. Suitable calking material or the like may be inserted between the end planks and the adjacent end wall or filler strip 28. The planks may be bolted to the center sill, bolt holes being drilled through them at suitable points avoiding underneath car parts or equipment other than the center sill. The apertures 20 provide relatively large areas conveniently distributed over the floor at which fastening means may be driven into the cores to secure lading in the car, and the registering relation of the apertures in the plates 18 and 19 allows bolts to extend clear through the floor, as required in some cases. When repeated use makes these portions of the cores useless for attaching purposes, they may be drilled out and replaced by wooden plugs secured by waterproof glue or other suitable means.

The floor 10 may be employed in new construction or as a replacement in old cars, and in either case it is advantageous to have the planks 11 of a length corresponding to the distance between the lining E at the opposite car sides so that they may readily be laid with the lining already in place. The grain strips J serve as spacing strips along the sides of the car, as will appear from Fig. 2. Calking material may fill the joints between the plank ends and the strips J. The planks 11 are shown with the plates 19 providing the lower faces thereof, but any or all of the planks may be turned over without affecting the arrangement or buttress interlock, and similarly the planks may be turned end for end and still interlock properly with adjacent planks, for in any case a flange 22 will be the upper one at the left side of the plank, as viewed in Fig. 3, and the terminal bent portions of the side edges will nest without longitudinal offset of the planks, the other bent portions also interengaging properly. The floor may thus be laid in minimum time, for no special care to present one plank to another in a particular relation is required.

The armored plank of this invention may of course be used for flooring or decking in other applications than railway cars, and for walls, partitions, and the like. The sheathing may if desired be continuous instead of apertured. The core may be of one piece, and other suitable materials may be employed for the core instead of wood. The plates may be of the non-skid type having suitable anti-slip projections on their outer faces.

The fact that the flanges 22 and 23 are so formed as to provide for substantially the same degree of flexibility at the side edges of the planks as at the other portions thereof means that deflection of a plank when subjected to a load is substantially uniform throughout its extent, and bending stress concentration at the side edges is avoided so that permanent deformation or set at the sides apart from the sheet as a whole is prevented. At the same time, the buttress edges provided by the flanges serve to transmit load from one plank to the adjacent planks in a very efficient manner, so that bending stresses are distributed over a considerable area of the floor and are not concentrated on a single plank. This may be expressed by the statement that the buttress edge interlock holds the planks against relative movement out of their plane, since deflection or other movement of a plank out of its plane can occur only by corresponding movement of the adjacent plank or planks and such corresponding movement requires that the load on the first plank be transmitted to that or those disposed adjacent to it. It may be pointed out that the projections of the buttress edges bear on each other in practically direct compression, so that the load transmission from one plank to the next is accomplished quickly, directly, and effectively, and no wedging action occurs between the nested portions which might tend to separate adjacent planks, since there is no bearing pressure on the inclined surfaces. Thus even if the means securing the planks to the underframe should loosen, the planks will not separate. The steel plates on opposite faces of the wooden core boards cooperate with the boards to provide maximum bending strength in all directions for the planks. The secure at-

tachment of the sheathing plates closely against the core provides greater bending strength because the plates are supported against buckling by the core and therefore are less readily deflected by a load. The pins provide a relatively flexible shear connection between the plates which also gives greater strength to the plank, since the plates are deflected under the bending moment resulting from an imposed load so as to develop their full tensile and compressive strength to resist the bending moment with such deflection bringing into play the bending strength of the core. This would not be the case if a rigid shear connection between the plates were employed. The disclosed construction employs the core not as a mere filler but as an actual load-sustaining element of the plank. The pins, in addition to holding the core parts against movement and providing a flexible shear connection between the sheathing plates, reinforce the core in shear so as to take full advantage of the strength of the plates.

By reason of the closely nested side-by-side relationship of the planks and their securement directly to the center sill, the floor 10 is employed, in effect, as a unitary plate substantially rigid with the center sill extending over the full area of the bottom of the car, which is fixed to the side sills and abuts the end sills. Impacts on the center sill in draft and buff are shared by this plate and transmitted by it to the remainder of the car through the side and end sills. The resulting stresses, however, are spread or distributed by the plate to a multiplicity of points over practically the entire car so that a relatively small stress or load is imposed at any one point, in contrast to the concentrations of loads at a relatively few points of the car structure when only the underframe members, such as bolsters and crossbearers, are employed to transmit center sill impact forces to the remainder of the car. The arrangement of the floor 10 as disclosed increases the capacity of the car to withstand draft and buffing shocks and therefore increases its useful life.

The armored plank of this invention thus not only provides a strong, long-wearing surface, but serves as a structural member of great strength and permits a floor construction increasing the buffing strength of a railway car, while lending itself to simple and economical manufacturing methods and to the use of inexpensive materials.

What is claimed is:

1. An armored plank for railway car floors and the like, comprising a non-metallic core, a pair of metal sheathing plates overlying opposite faces of the core in close contact therewith, and metal pins extending through the core with the ends thereof flush with the core faces and welded to the plates to hold the core and plates in assembly, each of the plates having flanges at its opposite sides spaced from the corresponding core side edges and extending substantially to the midplane of the core to abut the flanges of the other plate, each of the flanges being of sinusoidal form substantially throughout its length with adjacent portions of generally conoidal form alternately oppositely diverging from the edge of the plate inwardly and outwardly relative to the adjacent core side edge and having the terminal conoidal portions at opposite ends extending oppositely, the flanges of each plate each having the inwardly extending portions thereof disposed opposite the outwardly extending portions of the flange of the other plate at the same core side edge to locate the edges of the opposed flanges in abutting relationship to each other at points between the adjacent portions of each and to provide outwardly extending projections with abutment surfaces substantially at the midplane of the plank alternately facing oppositely, whereby the sides of the plank are of substantially the same flexibility as the remainder thereof to avoid concentration of bending stresses at the sides and are adapted for interlocking engagement of the plank with similar planks in load-transmitting relation.

2. An armored plank for railway car floors and the like, comprising a non-metallic core, a pair of metal sheathing plates overlying opposite faces of the core in close contact therewith, and metal pins extending through the core with the ends thereof flush with the core faces and welded to the plates to hold the core and plates in assembly, each of the plates having flanges at its opposite sides spaced from the corresponding core side edges and extending substantially to the midplane of the core to abut the flanges of the other plate, certain of said pins being spaced along the side edges of the core to secure the plates together closely adjacent the opposed flanges, each of the flanges being of sinuous form substantially throughout its length with adjacent portions of generally conoidal form alternately oppositely diverging from the edge of the plate inwardly and outwardly relative to the adjacent core side edge and having the terminal conoidal portions at opposite ends extending oppositely, the flanges of each plate each having the inwardly extending portions thereof disposed opposite the outwardly extending portions of the flange of the other plate at the same core side edge to locate the edges of the opposed flanges in abutting relationship to each other at points between the adjacent portions of each and to provide outwardly extending projections with abutment surfaces substantially at the midplane of the plank alternately facing oppositely, whereby the sides of the plank are of substantially the same flexibility as the remainder thereof to avoid concentration of bending stresses at the sides and are adapted for interlocking engagement of the plank with similar planks in load-transmitting relation.

3. An armored plank for railway car floors and the like, comprising a non-metallic core, a pair of metal sheathing plates overlying opposite faces of the core in close contact therewith, and metal pin members extending through the core secured at their ends to the plates to hold the core and plates in assembly, each of the plates having flanges at its opposite side edges spaced from the corresponding core side edges and extending substantially to the midplane of the core to abut the flanges of the other plate, each of the flanges being sinuous substantially throughout its length with merging adjacent portions of generally conoidal form alternately oppositely diverging from the edge of the plate inwardly and outwardly relative to the adjacent core side edge and having the terminal conoidal portions at its opposite ends extending oppositely, the flanges of each plate each having the inwardly extending portions thereof disposed opposite the outwardly extending portions of the flange of the other plate at the same core side edge to locate the edges of the opposed flanges in abutting relationship at points of merger of adjacent portions of each and to provide outwardly extending projections along the core side alternately facing oppositely substantially at said midplane and inwardly extending recesses each adjacent and opposite a projection.

4. An armored plank for railway car floors and the like, comprising a non-metallic core, a pair of metal sheathing plate members overlying opposite faces of the core in close contact therewith, and means holding the core and plate members in assembly, each of the plate members having a flange extending partially over a side edge of the core in opposed abutting relation to the flange of the other plate member, and each flange being formed substantially throughout its length with adjacent portions of generally conoidal form alternately diverging from the edge of the plate member inwardly and outwardly relative to said core side edge, the inwardly extending portions of one flange being disposed opposite the outwardly extending portions of the other flange to locate the flange edges abutting each other at points between the adjacent portions of each and provide outwardly extending projections facing alternately in opposite directions, whereby the plank side is of substantially the same flexibility as the remainder of the plank to avoid bending stress concentration at the side and

is adapted for engagement with similar planks in load-transmitting relation.

5. An armored plank for railway car floors and the like, comprising a non-metallic core, a pair of sheathing plate members overlying opposite faces of the core in close contact therewith, and means holding the core and plate members in assembled relation, each of the plate members having a flange extending partially over a side edge of the core in opposed abutting relation to the flange of the other plate member, each flange being formed substantially throughout its length with portions thereof extending in planes alternately oppositely diverging from the edge of the plate member toward and from said core side edge with the portions of one flange extending toward said side edge disposed opposite the portions of the other flange extending away from the core side edge to have the flange edges abut at points between the said portions of each and provide buttress projections along the side of the plank alternately directed toward the planes of the opposite faces thereof.

6. An armored plank for railway car floors and the like, comprising a non-metallic core, a pair of sheathing plate members overlying opposite faces of the core in close contact therewith, means holding the plate members and core in assembled relation, and opposed meeting flanges on the plate edges along a side of the core each having along substantially the entire length thereof generally conoidal portions alternately oppositely inclined relative to the plate inwardly and outwardly from the plate edge, the outwardly inclined portions of one flange being disposed in alinement transversely of the flanges with inwardly inclined portions of the other flange, whereby the plank side is of substantially the same degree of flexibility as the remainder of the plank and has oppositely facing load-transmitting buttress projections alternating along its length.

7. A railway car floor or the like comprising a plurality of armored planks arranged side by side, each plank having a non-metallic core, metal sheathing plates overlying opposite faces of the core in close contact therewith, metal pin members extending through the core and secured at their ends to the plates to hold the core and plates in assembly, and side flanges on each plate extending over the side edges of the core in abutting relation to the flanges of the other plate each having adjacent merging portions thereof alternately oppositely inclined inwardly and outwardly relative to the adjacent core side edge with the terminal inclined portions at its opposite ends extending oppositely, the opposed flanges at each core side edge having the inwardly inclined portions of one disposed opposite the outwardly inclined portions of the other and the flange edges abutting at the points of merger of the inwardly and outwardly inclined portions of each substantially along the midplane of the plank, each plank of the floor having the flanges of each plate disposed in nested relation with the flanges of the corresponding plates of an adjacent plank and in abutting relation with the flanges of the non-corresponding plates at points adjacent said points of abutment of the flanges of one plank.

8. A vehicle floor or the like comprising a plurality of armored planks arranged side by side, each plank having a non-metallic core, metal sheathing plates secured on opposite faces of the core, and side flanges on each plate extending over the side edges of the core in abutting relation to the flanges of the other plate each having adjacent merging portions thereof alternately oppositely inclined inwardly and outwardly relative to the adjacent core side edge with the terminal inclined portions at its opposite ends extending oppositely, the opposed flanges at each core side edge having the inwardly inclined portions of one disposed opposite the outwardly inclined portions of the other and the flange edges abutting at the points of merger of the inwardly and outwardly inclined portions of each substantially along the midplane of the plank, each plank of the floor having the flanges of each plate disposed in nested relation with the flanges of the corresponding plates of an adjacent plank and in abutting relation with the flanges of the non-corresponding plates at points adjacent said points of abutment of the flanges of one plank.

9. A vehicle floor or the like comprising a plurality of sheathed planks arranged side by side, each plank having a non-metallic core, sheathing plates secured on opposite faces of the core, and opposed meeting flanges on adjacent edges of the plates extending over a side of the core having merging portions alternately oppositely inclined relative to the respective plate inwardly and outwardly of the plate edge with the outwardly inclined portions of one flange at the core side arranged opposite the inwardly inclined portions of the other flange and having the flange edges abutting at the points of merger of the inwardly and outwardly inclined portions, adjacent planks having their corresponding flanges disposed in nested relation and their non-corresponding flanges in abutting relation at points adjacent the points of abutment of the flanges of one plank.

10. In a floor or the like, a plurality of armored planks each comprising a non-metallic core, a pair of sheathing plate members overlying opposite faces of the core in close contact therewith, means securing the plate members to the core, and opposed meeting flanges on the plate members each extending from a plate member edge partially over a side edge of a core having merging portions alternately oppositely inclined relative to the respective plate member inwardly and outwardly from the plate member edge toward and from said core side edge, the outwardly inclined portions of one flange being disposed opposite the inwardly inclined portions of the other flange with the flange edges abutting at the points of merger of the inwardly and outwardly inclined portions of each, said planks being secured side by side with the corresponding flanges of each pair of adjacent planks in nested relation and the non-corresponding flanges in abutting relation at points adjacent the points of abutment of the flanges of each plank, whereby relative movement of a plank in either direction in a plane normal to the plane of the planks is resisted by an adjacent plank.

References Cited in the file of this patent

UNITED STATES PATENTS

487,172	Britton	Nov. 29, 1892
764,219	Volp	July 5, 1904
1,486,113	Baxter et al.	Mar. 4, 1924
2,009,056	Schaffert	July 23, 1935
2,200,159	Davis	May 7, 1940
2,249,590	Allen	July 15, 1941
2,485,648	Norquist	Oct. 25, 1949
2,565,705	Swann	Aug. 28, 1951
2,585,961	Norquist	Feb. 19, 1952