

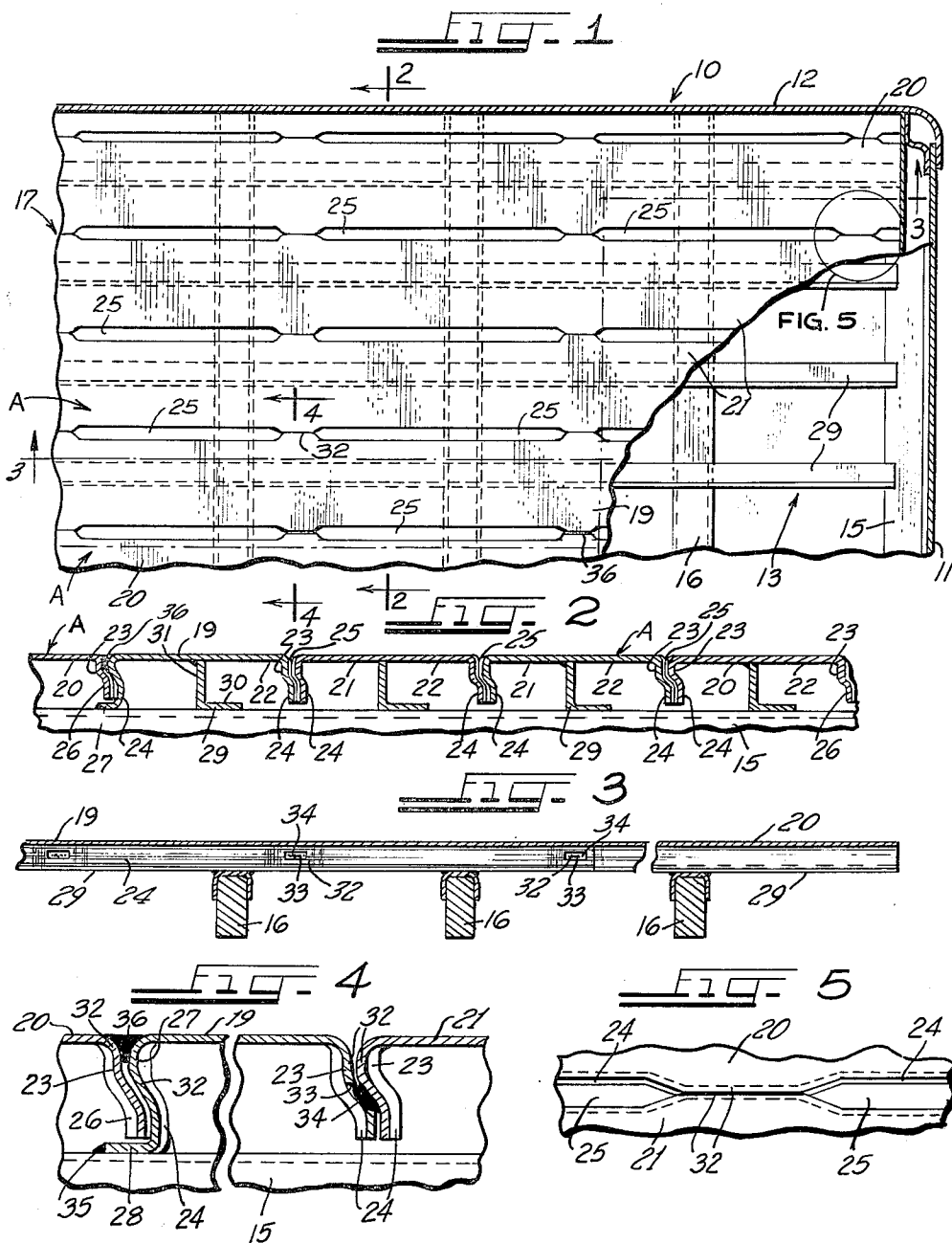
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W. R. SHAVER

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NAILABLE METAL FLOOR STRUCTURE FOR RAILWAY CARS

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INVENTOR.

WILLIAM R. SHAVER

BY  
*Wayne Morris Russell*  
ATTORNEY

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## NAILABLE METAL FLOOR STRUCTURE FOR RAILWAY CARS

William R. Shaver, Hammond, Ind., assignor to Pullman Incorporated, Chicago, Ill., a corporation of Delaware  
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The present invention relates to a metal floor structure for vehicles and more particularly to a metal floor for railway cars.

It is an object of the present invention to provide an improved metal floor structure of the type including a plurality of planks assembled as units in side-by-side relation.

It is a further object to provide an improved metal floor structure for facilitating the mounting thereof in the railway car in which it is employed.

It is still a further object to provide a metal floor structure of the type which includes a plurality of juxtaposed metal channel-like floor planks fixed together as a unit and in which each of the planks is supported by intermediate support members and in which the outer plank of the floor plank unit is formed with attaching means to facilitate the attachment of the unit to the car.

It is another object to provide a metal floor structure of the type having a plurality of juxtaposed metal planks with an improved structure for forming a nailing groove between said planks.

Further objects and features will hereinafter appear. In the drawing:

FIG. 1 is a general plan view of a portion of a railway equipped with the floor structure of the present invention;

FIG. 2 is a cross-sectional view taken substantially along the lines 2-2 of FIG. 1;

FIG. 3 is a cross-sectional view taken substantially along the lines 3-3 of FIG. 1;

FIG. 4 is a view taken substantially along the lines 4-4 of FIG. 1 showing on an enlarged scale how the planks are attached to form a floor plank unit and also how the units are attached to each other; and

FIG. 5 is an enlarged view of the circled portion of FIG. 1 showing the embossments formed on each of the planks for providing nailing grooves between the planks.

Referring now to the figures there is shown a section of a railway vehicle 10 having side 11 and end walls 12, and an underframe 13 including side sills 15 and intermediate longitudinal stringers 16. Supported transversely on the underframe 13 is a nailable steel floor structure 17 which may be the general type covered in U.S. Patent No. 2,910,016, assigned to the assignee of the present invention.

In accordance with the present invention, the floor structure includes a plurality of juxtaposed planks pre-assembled as units A in side-by-side relationship for the full length of the vehicle. In FIG. 1 only one complete floor plank unit is shown and only a portion of the adjacent unit A is shown. Each unit A includes end planks 19 and 20 and intermediate planks 21. The outer and intermediate planks 19, 20 and 21 of which the planks 20 and 21 are of substantially identical structure including a channel-shaped section having a horizontal web portion 22 providing the floor surface. The intermediate planks 21 are formed with depending marginal or side flanges 23 of approximately the same height and extend continuously for the full length of the planks along the respective opposite side edges thereof. The flanges 23 are formed with vertically extending offset leg portions 24 so as to provide a nailing groove 25 between adjacent planks for receiving and clinching nails driven therein. The end plank 20 is also formed with a depending flange 23 along the inner edge of the horizontal web and is

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similarly provided with a vertically extending offset leg portion 26. The outer flange 23 may be formed so that its offset leg portion 26 is of somewhat lesser height than the offset leg portion 24 of the planks 21 for reasons which will become apparent hereinafter.

To facilitate the installation of the nailable metal floor units A in the railway vehicle, the end plank 19 is formed with an outer flange 27 similarly formed with a vertically extending offset leg portion 24 from the lower end of which there extends a lateral attaching flange 28. The lateral attaching flange 28 extends the full length of the end plank 19 and is arranged to underlie the offset leg portion 26 of the outer depending flange 23 of an adjacent floor plank unit A as shown in FIGS. 2, 3 and 4.

The planks 19, 20 and 21 are each supported between their respective flanges by an intermediate support member 29 which, in the preferred form shown, comprises an angle member having a horizontal leg 30 supported directly on the members of the underframe and a vertical leg 31 fixed to the underside of the respective horizontal webs 22 of the planks by way of continuous weld. The vertical leg 31 of the support members 29 is of greater height than the plank flanges 23 so that only the lateral attaching flange 28 of the outer flange 27 contacts the underframe support members 15 and 16.

The spaced relation between the planks to provide the nailing grooves 25 is maintained by means of opposing and abutting spacers or embossments 32 formed in the flanges 23 at spaced intervals on all of the flanges of the planks 19, 20 and 21. As shown the embossments 32 are formed along the entire height of each of the flanges and also along the offset leg portions 24 and 26. The embossments are equally spaced along the length of the planks so that embossments 32 on the adjacent legs of the flanges abut and nest within each other thereby to provide mutual supports for each of the planks of the unit A and maintain the horizontal webs 22 substantially coplanar. Such nesting relationship is achieved by offsetting the vertically depending portions 24 and 26 in the same horizontal direction and by contouring the embossments similar to the flanges.

For assembling of the individual planks of a unit A as shown in FIGS. 2 and 3, one of the mating or abutting flanges 23 at each of the embossments 32 is provided with a slot 33 which may be in the form of a rectangular opening and a weld 34 is applied therein so as to hold the planks fixed to each other as a unit. It is to be noted that the units each include an outer plank 19 having a lateral attaching flange 28, intermediate planks 21 and an outer plank 20 having a shortened offset leg portion 26.

A plank unit A assembled as above described, is placed on the underframe 13 and jacked into position such that the intermediate support members 29 are supported on but not fixedly secured on the underframe members 16 and 15. To hold the unit A secured to the underframe 13, a weld 35 is applied along the lateral attaching flange 28 of the end plank 19 wherever the flange 28 bears against one of the underframe supporting members, namely, the side sill 15 and intermediate stringers 16. Thereafter, successive units A are placed and jacked into position on the underframe such that the free end of the outer offset leg portion 26 of the outer plank 20 is spaced above the lateral attaching flanges 28 and the embossments 32 on the adjacent outer planks 19 and 20 are aligned so that the depending flanges 23 and 27 overlie each other in abutting relation. Advantageously, the adjacent units A are held fixed to each other by a weld 36 applied on the upper surface along the line of juncture of the embossments 32 as shown in the left-hand portion of FIG. 4. It is to be observed that the lateral attaching flange 28 is provided only along one of the outer planks 19 for a unit A so that the effective

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support of each of the planks is achieved by the intermediate support member 29 because this latter member maintains the terminal ends of the depending flanges 23 spaced above the underframe members.

From the foregoing, it is readily apparent that the floor structure of the present invention is constructed and arranged so as to facilitate the assembly thereof into a railway car. The provision of a lateral attaching flange on one of the end planks makes it possible to easily weld the floor plank unit into position and does not require that the intermediate members be fixedly secured thereto. Obviously, because of the more or less channel-shaped configuration of the individual planks, access for welding the intermediate support members to the underframe is more difficult and therefore more time-consuming than when applied along the lateral attaching as in the present invention.

What is claimed is:

In a freight vehicle an underframe including a plurality of longitudinally extending members in combination with a nailable metal floor structure attached to said underframe, said metal floor structure comprising a plurality of side-by-side floor units each comprising a plurality of attached identical channel-shaped metal floor planks of which one defines one of each of said units, a single end plank attached to one of said identical planks at the other end of each of said units, each of said identical planks and said end plank extending transversely of said longitudinal underframe members, each of said identical planks and said end plank having a horizontal web and depending side flanges, said depending side flanges each having complementary abutting embossments spaced along the length thereof providing nailing grooves between said embossments, one of said depending side flanges of said end plank abutting one of said depending side flanges of an adjacent identical plank and being identical to the other of said adjacent identical plank depending side flanges which is remote from said abutting side flange, said other depending side flange of said end plank remote from said abutting side flange defining the outer end of each floor unit and having a lateral attaching flange integral therewith and extending

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outwardly from said unit and contacting said longitudinal support members, each of said planks having an identical intermediate supporting member secured at one end to the underside thereof between said depending flanges and the other end detachably resting on said longitudinal underframe members and supporting said planks thereon, said intermediate support member being of greater height than the height of said depending flanges of said identical planks, means applied from above said longitudinal members fixedly attaching said floor units to said underframe where said lateral attaching flange contacts said underframe members to provide the sole attaching means of each of said units to each of said underframe members, said units being arranged in side-by-side relationship with said lateral attaching flange along said end plank of one of said units underlying in spaced relationship the free end of the outer downwardly depending flange of an identical plank at the one end of an adjacent unit, and means fixedly securing adjacent planks of said units and an end plank of one unit to an adjacent identical plank of an adjacent unit at said embossments.

#### References Cited by the Examiner

##### UNITED STATES PATENTS

|           |       |                 |           |
|-----------|-------|-----------------|-----------|
| 2,147,965 | 2/39  | Clauss          | 52—377    |
| 2,250,253 | 7/41  | Bowen           | 52—377    |
| 2,410,191 | 10/46 | West            | 52—53     |
| 2,454,604 | 11/48 | Heim            | 52—377    |
| 2,457,086 | 12/48 | Mitchell et al. | 52—377    |
| 2,852,112 | 9/58  | Shay            | 52—377    |
| 2,900,055 | 8/59  | Shaver          | 52—377    |
| 2,910,016 | 10/59 | Faverty et al.  | 52—582    |
| 3,026,821 | 3/62  | Oakley          | 52—489 X  |
| 3,102,613 | 9/63  | Johnston        | 105—422 X |

##### FOREIGN PATENTS

613,896 2/61 Canada.

RICHARD W. COOKE, JR., *Primary Examiner*.

JOEL REZNEK, *Examiner*.