Feb. 16, 1954 H. E. OSBORN 2,669,193

FLOOR CONSTRUCTION FOR RAILWAY CARS

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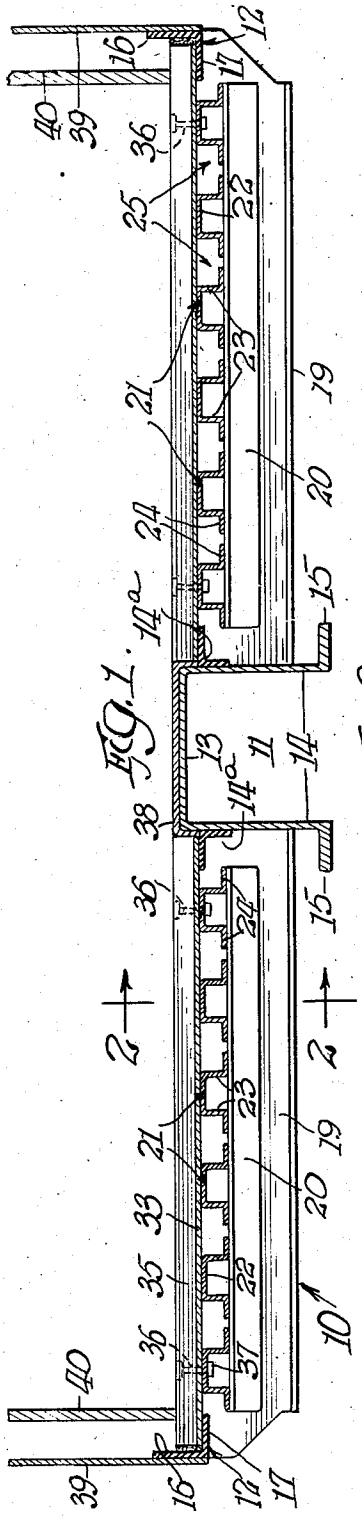


FIG. 1.

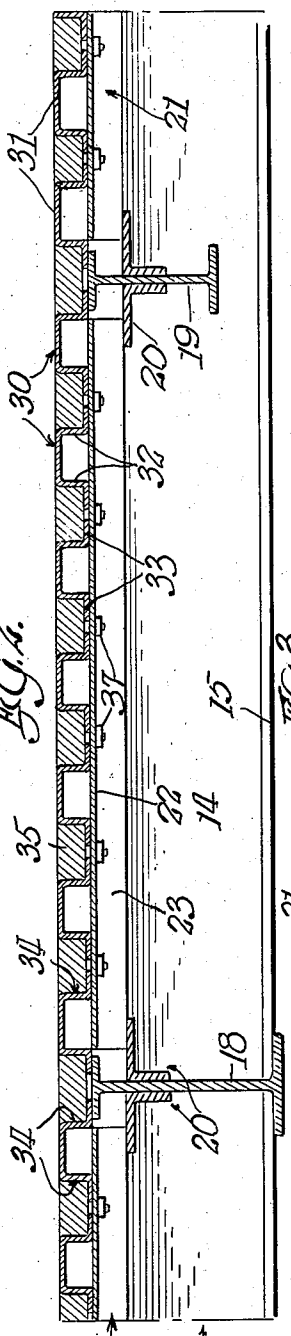


FIG. 2.

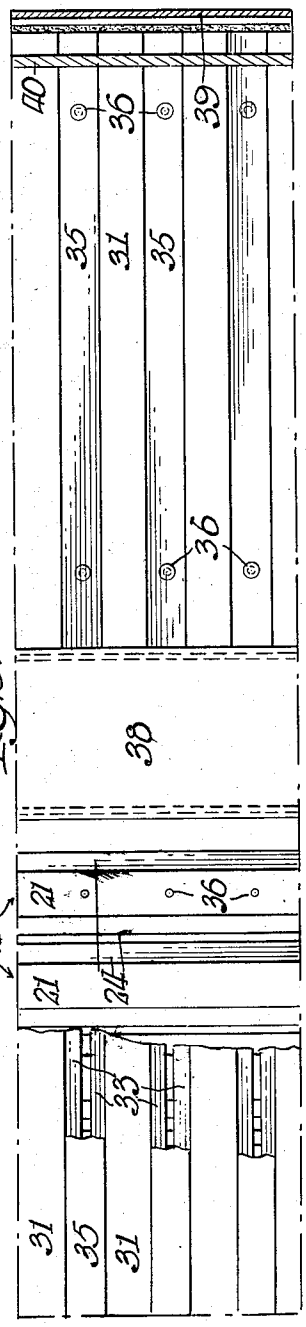


FIG. 3.

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FLOOR CONSTRUCTION FOR RAILWAY CARS

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8 Claims. (Cl. 105—422)

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This invention relates to improvements in floor constructions for railway cars and it consists of the matters herein illustrated and described and more particularly pointed out in the appended claims.

One of the objects of the present invention is to provide a floor construction for railway cars, and particularly those carrying commodities, and which is strong and rigid for a high resistance to concentrated loads of the order which produce failures in conventional wood floors as now made, which is relatively light in weight and inexpensive to produce and which occupies but little vertical space in the car of which it forms a part.

Another object of the invention is to provide a floor construction for the purpose mentioned, the active surface of which, to each side of the center sill, is divided into alternating metal and wood band like areas and which not only provides a good surface for lift truck movement, used in loading and unloading the car, but which provides a safe footing for persons who must work within the car.

The above mentioned objects of the invention, as well as others, along with the advantages thereof, will more fully appear as the specification proceeds.

In the drawing:

Fig. 1 is a transverse vertical sectional view through a floor construction for railway cars embodying the preferred form of the invention.

Fig. 2 is a fragmentary longitudinal vertical sectional view through the improved floor structure as taken on the line 2—2 and on a scale enlarged over that of Fig. 1.

Fig. 3 is a fragmentary plan view of a portion of the improved floor construction shown in and on the scale of Fig. 1.

Referring now in detail to that embodiment of the invention illustrated in the drawing, 10 indicates as a whole the underframing of a railway freight car and which includes a center sill 11 and side sills 12—12. The center sill is herein shown as having an inverted channel cross section, with a web 13 at the top and with sides 14—14 each terminating at the bottom in a laterally outwardly extending flange 15. The side sills 12—12 are herein shown as each constituted by an angle bar with an upright flange 16 and an inwardly extending horizontal flange 17 at the bottom.

Extending laterally outward from each side of the center sill 11 are longitudinally spaced cross bearers 18 and 19 respectively in the form of I beams and the outer end of said cross bearers are

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operatively attached to the side sills. Attached to the outer face of each side 14 of the center sill is a supporting angle bar 14a and the vertical flange of each bar extends downwardly from its horizontal flange that faces outwardly and is disposed in the same plane as that of the horizontal flange 17 of the side sills 12—12.

Fixed to each face of the web of each cross bearer is the vertical flange of a supporting angle bar 20, the horizontal flange of which is at the top and faces outwardly.

Extending between the web of adjacent cross bearers, at each side of the center sill, is a lower course of laterally spaced beams 21 which extend longitudinally of the car. Each beam is in the form of a downwardly opening channel that includes a flat top web 22 and depending sides 23, each of which terminates in an outwardly extending flange 24. The ends of the flanges 24 of all of the beams in each set rest upon and are attached as by welding to the horizontal flanges of the angle bar supports 20. When the beams of said course are in place, they are separated by upwardly opening channels 25, as best appears in Fig. 1, and the top surfaces of the webs of said beams are disposed in the plane of the top surfaces of the flanges 17 of the side sills and the horizontal flanges of the angle bars 20 on the side and on the center sills.

Arranged at a right angle to the beams in the lower course is an upper course of lateral beams 30 which extend transversely of the car between each side of the center sill and the side sill on the same side of the car. Each beam is in the form of a downwardly opening channel that includes a flat top web 31 and depending sides 32, each of which terminates in an outwardly extending flange 33. In cross sectional dimensions, the beams in the upper and the lower courses are counterparts.

The outer ends of the flanges 33 of the beams in the upper course, engage upon and are attached to the flanges 17—17 of the side sills 12 and the inner ends of said flanges 22 engage upon and are attached to the horizontal flanges of the bars 14a on the center sill 11. The mid portions of said flanges 33 of the beams 30 engage upon the top webs 22 of the beams 21 in the course below and are suitably attached thereto. When the beams of the upper course are in place they are separated by upwardly opening channels 34 and the flanges 24 of adjacent beams 21 are spaced apart, as best appears in Fig. 2.

The upwardly opening channels 34 in the upper course are each filled with a wood plank 35

and the top surface of said planks are flush with the top surfaces of the webs **31** of the beams **30** in the upper course. These planks are secured in place by bolts **36** which extend down through the planks, through the spaces between the edges of the flanges **33** of adjacent beams in the upper course and through the webs **22** of the beams in the lower course. As the beams in said lower course open downwardly, nuts **37** are applied to each bolt from within the associated channel.

It is to be noted from Fig. 2 that the inner ends of the beams in the upper course and the planks **35** therein stop a trifle short of the top of the center sill and the top surfaces of said beams and planks are spaced above that of the center sill. To provide a surface along the center sill that is flush with the surface of the beams and planks in the upper course, at either side thereof, I apply to the top of the center sill a shallow downwardly facing channel member **38** which best appears in Fig. 1 and which may be attached to the web of said center sill in any desired manner.

The outer sheathing and the inner lining of the car body are indicated at **39** and **40** respectively in Fig. 1.

A floor made as above described will have an active surface defined longitudinally along the center line of the car by the channel **38** and along each side thereof the active floor surface is provided by the alternate transverse webs **31** of the beams **30** and planks **35** in the upper course.

This construction defines an active floor surface for the movement of lift trucks used in loading and unloading the car and provides a safe tread surface for workmen in the car.

The improved floor does not detract from the lading space of the car and even though it does not occupy much vertical space, it is strong and rigid and has a long period of usefulness without requiring servicing.

I claim as my invention:

1. In combination with the underframing of a railway freight car including side and center sills and cross bearers extending between the center sill and the side sills, upper and lower courses of downwardly opening laterally spaced channels, in the space between said center sill and the side sills, means for supporting the channels in the lower course from said cross bearers, means for supporting the channels in the upper course from said side and center sills, the channels in the lower course extending longitudinally of the car and the channels in the upper course extending transversely of the car and engaging upon those in the lower course, wood planking in the channels between those beams in the upper course and coacting therewith in forming a flush floor surface portion at each side of the center sill, means for securing said planking and channels in the upper course to the channels in the lower course, and means covering the top surface of the center sill between said floor surface portions and coacting with the latter in completing the active floor surface for the car.

2. In combination with the underframing of a railway freight car including means providing a center sill and a side sill spaced outwardly from each side of said means, and transverse bearer members between said center and side sills, means supported by said underframing and composed of vertically tiered courses, the upper one of said courses being formed to provide alternate upwardly and downwardly facing channels, extending in one direction of the car, the top surface portions of said downwardly facing channels on each side of the first mentioned means being disposed in the plane of the top surface portion of said means, means filling said upwardly facing channels substantially flush with said top surface portions of said downwardly facing channels, the bottom of said upper course being disposed below the top surface of said center sill providing means and being supported from said means and said side sills and the next course below and which next course is supported from said transverse bearer members.

3. In combination with the underframing of a railway freight car including means providing a center sill and a side sill spaced outwardly from each side of said means, with each side sill including an inwardly extending flange, means providing an outwardly extending flange on each side of said means and disposed in the plane of said flanges of the side sills, and transverse bearer members between said means and said side sills, vertically spaced courses of metallic means, the metallic means in the lowermost course being supported at its ends from the transverse bearer members, the metallic means in the upper course being formed to provide downwardly opening channels having top surfaces disposed in the plane of the top surface of the first mentioned means and separated from each other by upwardly opening channels, said metallic means in said upper course being supported at its ends from the flanges of said first mentioned means and said side sills, and being supported between its ends from the means providing the lower course and other means filling said upwardly opening channels and coacting with the top surface portions of the downwardly facing channels of the means in the upper course and the top surface of the first mentioned means in forming the complete active surface for the floor of the car.

4. In combination with the underframing of a railway freight car including center and side sills and cross bearers extending between the center sill and the side sills, upper and lower courses of beams in the spaces between said center sill and the side sills, means for supporting the beams in the lower course from said cross bearers, means for supporting the beams in the upper courses from the center and side sills, the beams in the lower course extending longitudinally of the car and the beams in the upper courses extending transversely of the car in laterally spaced relation to provide upwardly opening channels between them, the beams in the upper courses engaging upon those in the lower course, wood planking in said channels in the beams in the upper course and coacting therewith in forming a flush surface portion at each side of the center sill, means for securing the beams in said courses together, and means covering the top surface of the center sill between said surface portions and coacting therewith in completing the active surface of the floor of the car.

5. In combination with the underframing of a railway freight car including a center sill of inverted channel cross section having a top web and side walls, side sills including horizontal portions and cross bearers extending between the side walls of the center sill and said side sills, means providing longitudinal shoulders on the side walls of the center sill disposed in the plane of the horizontal portions of the side sills, a channel member disposed upon the top portion of the center sill and including flanges having

edge engagement with the longitudinal shoulders on said center sill, upper and lower courses of beams in the spaces between the center sill and the side sills, means for supporting the beams in the lower course from said cross bearers, the beams in the upper courses extending transversely of the car in laterally spaced relation to provide upwardly opening channels between them, the beams in the upper courses being supported at their ends upon the shoulders on the center sill and upon the horizontal flanges of the side sills and at points between said end engaging upon the beams in the lower course, wood planking in said channels coacting with the beams in the upper course and with said channel member in providing a flush floor surface for the car, and means for securing said planking in said channels.

6. In combination with the underframing of a railway freight car including side and center sills, metallic means including upper and lower courses of beams disposed between said center sill and each of said side sills, with the beams in the upper course extending in one direction of the car and with the beams in the lower course extending in another direction of the car, the beams in the upper course having parallel top portions separated by channels, means in said channels and having top portions substantially flush and coacting with the top portions of the beams in said upper course in forming the major active surface portions of the floor of the car between the center sill and both side sills, and means carried upon the center sill and having a top surface flush and coacting with said major active surface portions in completing the active surface of said floor.

7. In combination with the underframing of a railway freight car including side and center sills, metallic means including upper and lower courses of beams disposed between said center sill and each of said side sills, with the beams in the upper course extending in one direction of the car and with the beams in the lower course

extending in another direction of the car, the beams in the upper course having parallel top portions separated by channels, a wood plank in each of said channels with its top surface substantially flush and coacting with the top portions of the beams in said upper course in forming the major active surface portions of the floor of the car between the center sill and both side sills, and means carried upon the center sill and having a top surface flush and coacting with said major active surface portions in completing the active surface of said floor.

8. In combination with the underframing of a railway freight car including means providing a center sill and a side sill spaced outwardly from each side of said means, metallic means including upper and lower courses disposed between said means and each of said side sills, with the beams in the upper course extending in one direction of the car and with the beams in the lower course extending in another direction of the car, the beams in the upper course having parallel top portions separated by channels, means in said channels and having top portions substantially flush and coacting with the top portions of the beams in said upper course in forming the major active surface portions of the floor of the car and which surface portions of said means are substantially flush and coact with the top surface portion of said center sill providing means in completing the active surface of said floor.

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