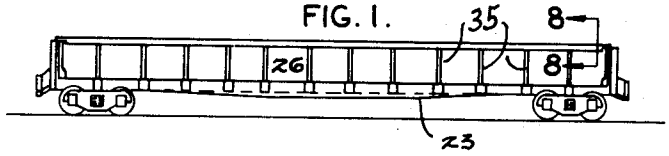
Aug. 11, 1953 W. M. SHEEHAN ET AL 2,648,294

RAILWAY GONDOLA CAR STRUCTURE

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FIG. 1.



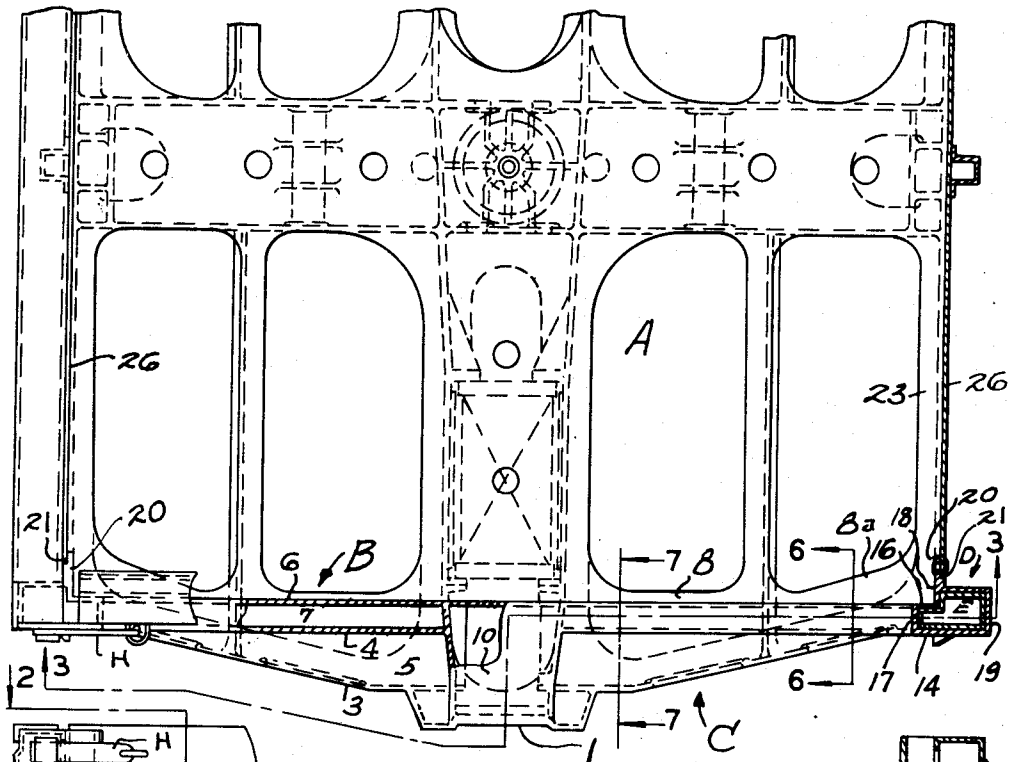


FIG. 2.

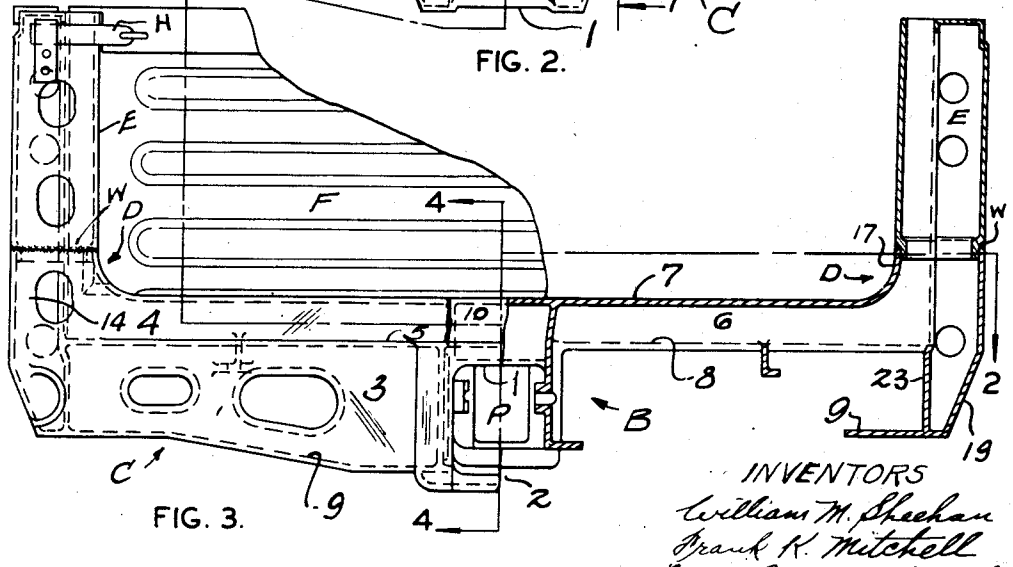


FIG. 3.

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RAILWAY GONDOLA CAR STRUCTURE

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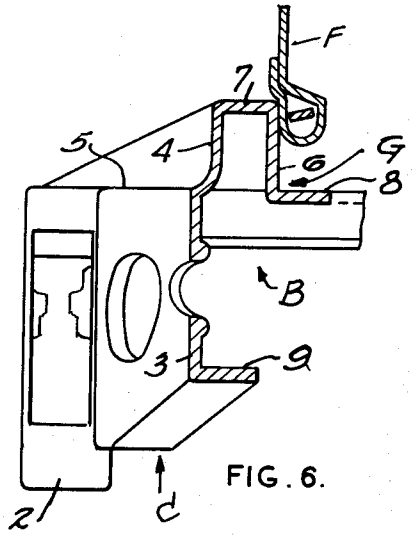


FIG. 6.

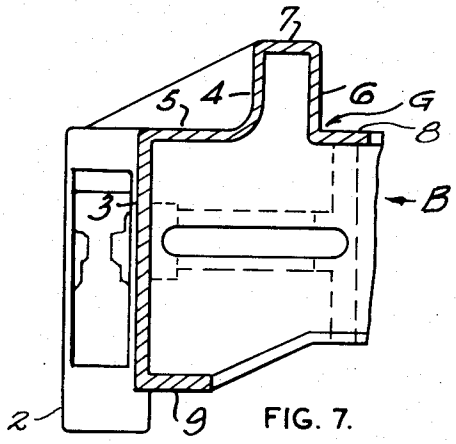


FIG. 7.

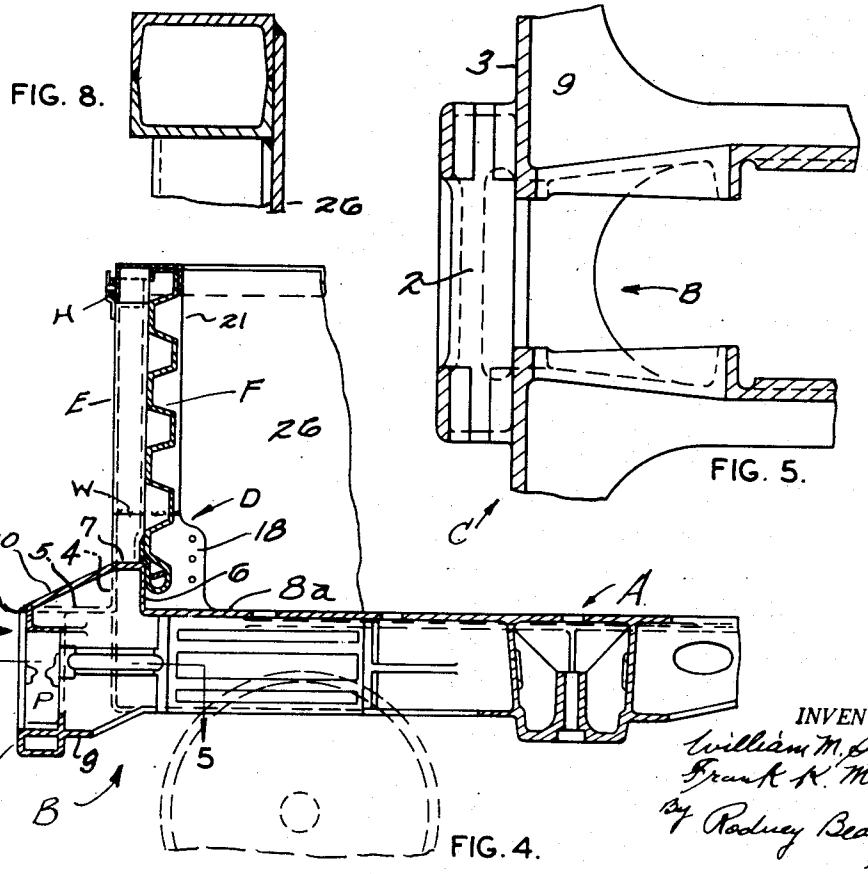


FIG. 4.

FIG. 5.

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RAILWAY GONDOLA CAR STRUCTURE

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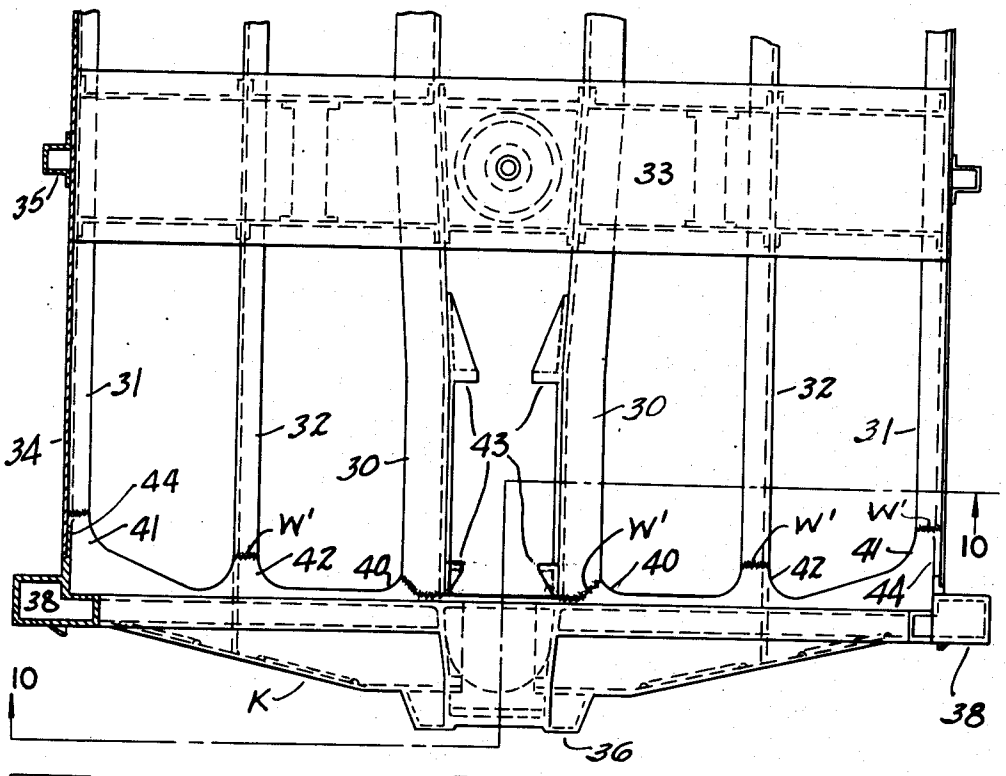


FIG. 9.

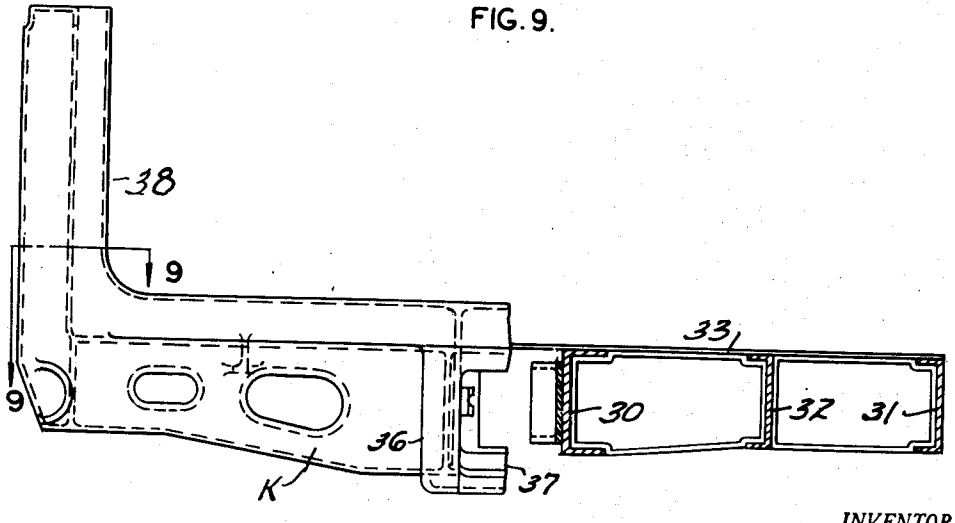


FIG. 10.

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RAILWAY GONDOLA CAR STRUCTURE

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Application December 5, 1951, Serial No. 259,924

19 Claims. (Cl. 105—406)

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The invention relates to railway rolling stock and is particularly, but not exclusively, adapted for use in gondola cars which have end walls hinged near the car floor and lowered to rest on the floor when the car is to carry articles which project beyond the ends of the car.

Since such cars do not have their end walls permanently fixed to the car underframe and car sides, it has been difficult to provide light weight rolled steel or cast steel framing structure strong enough to resist longitudinal thrusts of the lading against the end walls seated against the car end framing or to resist other forces which would spread the corner posts laterally.

When lading shifts longitudinally of the car against upright end walls, or when machinery for handling lading strikes the end wall or the rail at the top of the car side, forces are applied to the end walls and corner posts tending to bend or fracture the corner posts or other members of the car end framing.

The main object of the present invention is to construct the underframe, end framing, and side walls of cars of the class described so as to adequately resist the forces which have previously damaged the cars but without unduly increasing the weight of the framing. This object is largely attained by providing a generally hollow beam-like end sill and corner post structure, including portions against which the end wall abuts, comprising spaced webs with interconnecting bracing instead of having a simple open end sill and angular end posts with single webs for abutment by the end wall as used in previous rolled steel and cast steel structures.

Preferably, the main members of the framing structure are of cast metal and it is a further object of the invention to simplify the casting of the framing so as to reduce the costs of patterns and molds and the costs of pouring and handling the castings.

These and other detail objects are attained by the structure illustrated in the accompanying drawings, in which:

Figure 1 is a side elevation, largely diagrammatic, illustrating a car of the class described.

Figure 2 is a top view and horizontal section of one end of the car underframe and end structure and is taken on the line 2—2 of Figure 3.

Figure 3 is a front elevation and vertical transverse section of the end structure and is taken on the line 3—3 of Figure 2 and shows a portion of the end wall.

Figure 4 is a vertical longitudinal section taken on the line 4—4 of Figure 3.

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Figure 5 is a detail horizontal section taken on the line 5—5 of Figure 4.

Figures 6 and 7 are detail vertical longitudinal sections taken on the corresponding section lines of Figure 2.

Figure 8 is a detail vertical section on line 8—8 of Figure 1.

Figure 9 corresponds to Figure 2, but shows another form of the underframe and end structure.

Figure 10 is a front view and vertical transverse section of the end structure shown in Figure 9 and is taken on the line 10—10 of Figure 8.

The invention, as illustrated in Figures 1–8 embodies a one-piece underframe A with integral end structures B, each including an end sill C and corner post lower portions or bases D, to which separately formed corner posts E are applied. Each end sill C includes a striking plate 1 and a coupler carrier 2. The end sill has vertical webs 3 and 4 merging at the ends of the sill and offset inwardly of the ends to form a horizontal shoulder web 5. Web 3 increases in depth from the ends of the sill toward striking plate 1 and web 5 similarly increases in width. Web 4 is substantially uniform in depth throughout its length. A horizontal web 9 extends inwardly from the lower edge of web 3.

A horizontal floor supporting web or flange 8 is spaced from web 5 and is at the same level. Upstanding webs 4 and 6 extend along the adjacent parallel edges of webs 5 and 8 and a horizontal web 7 connects the upper edges of webs 4 and 6. Immediately over the coupler pocket P, webs 4 and 5 are interrupted or replaced by a forwardly and downwardly inclined web 10 merging with the outer edge of web 7 and the top edge of plate 1. The horizontal flange 8 extends inwardly from the lower end of web 6 and varies in width as indicated in Figure 2. Elements 6 and 8 form an angular recess G exteriorly of the hollow sill to receive and seat the bottom edge of the car end wall F. Elements 6, 7, 8 form an upright Z section from end to end of the end structure. Elements 4, 7, 6 form an inverted U section from each end of the end structure to the striking plate and abreast of the striking plate one leg of the U section is inclined as at 10.

At each end of the end sill, web 7 turns upwardly to form the inner side wall 17 of a corner post base D; inner upright web 6 extends upwardly to form the inner end wall 16 of the post base; upright web 4 extends upwardly to form the outer end wall 14 of the post base; lower web 9

extends upwardly to form the outer side wall 19 of the post base; and flange 8 extends upwardly to form an intermediate side wall 18 for the post base and a gusset-like member for attaching the separately formed car side wall plate 26. Elements 14, 16, 17, 18, 19 merge to form a box section which, with the large radius curvature between webs 7 and 17 and the wide end portion 8a of flange 8 and with the wide gusset 18, provides a strong, rugged corner structure which will not be broken by any force likely to be applied to it.

The lower ends of each corner post E are offset inwardly and are received within the corresponding walls of base D. Corner posts E are welded to bases D as indicated at W. Post base elements 16 and 18 and the corresponding elements of each post E form an upward continuation of the angular seat G for the car end wall. End wall F may be held in upright position and against its seat in the end sill and corner posts by simple latches H (Figures 2, 3). By unfastening latches H the end wall may be swung to horizontal position resting upon the car floor. The web of each corner post E extending upwardly from base web 18 extends rearwardly of the corner post box section, as indicated at 20, and is recessed at 21 to receive the car side wall plate 26, which is welded to the post throughout its height and forms a tie between the corner post, the corner post base and the adjacent portions of the underframe side sill 23.

The invention as illustrated in Figures 9 and 10 embodies an underframe with structural steel sills 30, side sills 31, intermediate sills 32 and bolsters 33. Side wall plates 34 and stakes 35 are mounted on the underframe as indicated in Figure 1. Secured to each end of the underframe is an end structure including an end sill K, buffer block 36 and coupler carrier 37, as previously described, but the ends of the end sill extend upwardly to form the entire corner posts 38 instead of post bases only.

The end structure includes inwardly extending projections 40, 41 and 42 for connection to the ends of sills 30, 31 and 32. Each end structure is a single one-piece casting and, preferably, is welded to the structural underframe sills as indicated at W'. The draft gear stops 43 which takes the draft gear forces are all on the center sills rearwardly of welds W' so that these forces do not pass through the welds. The sill projections 41 include gusset-like elements 44 to which the side plates 34 may be secured to better reinforce the corner construction.

A single underframe casting embodying longitudinal sills, main bolsters and intermediate transoms may be utilized in place of the structural steel underframe shown in Figures 6 and 7 and the separately cast end structures may be welded to the underframe casting. With such construction the entire underframe and end framing would consist of three castings welded into a rigid unit.

In each form of the invention the cast metal unit is relatively shallow, thus avoiding deep patterns and flasks and the resulting expense of molding and casting the framing as would be the case if the complete posts and underframe sills were made in one piece.

In each form of the invention the hollow beam-like end sill and the box section corner post arrangement, whether the entire posts are integral with the end sill or are separately formed, comprises a rigid corner construction well adapted to resist the forces to which it may be subjected by the shifting of lading or the striking of the car sides or end with lading machinery.

The details of the structure may be varied otherwise than as described without departing from the spirit of the invention and the exclusive use of those modifications coming within the scope of the claims as contemplated.

What is claimed is:

1. In a railway vehicle end structure, an end sill including an end wall seat and brace member comprising upright webs abreast of each other and spaced apart transversely of the sill, and a horizontal web connecting said upright webs, one of said upright webs being straight and continuous substantially from end to end of the member and the other upright web being substantially deeper than the first-mentioned upright web and being offset between its upper and lower edges with its upper portion paralleling the first-mentioned upright web from the member ends towards the middle of the member and with the offset shoulder between the portions increasing in width from the member ends to the middle of the member.

2. A railway vehicle end structure as described in claim 1, in which the upper portion of the deeper upright web and its offset shoulder are interrupted at the middle of the structure, and the connecting web is inclined downwardly at the interruption from the top of the other upright web to the top of the lower portion of the deeper web.

3. In a railway vehicle end structure, an end sill including a striking plate and coupler carrier at the middle of the structure, an upright web extending from end to end of the structure above the level of the striking plate, another upright web extending from the sides of the striking plate to each end of the structure and above the level of the striking plate, a web connecting the upper edges of said upright webs and a web inclined downwardly and outwardly from the top of the first-mentioned web to the striking plate.

4. In a railway vehicle end structure, an end sill including a striking plate and a coupler carrier at the middle of the structure, an end sill horizontal web extending from the striking plate towards each end of the structure, an end wall seat and brace member comprising substantially parallel spaced apart upright webs extending lengthwise of the structure at the inner edges of said horizontal web, there being a web connecting the upper edges of said upright webs, the outer of said upright webs being interrupted at the middle of the structure and the connecting web being inclined from the inner upright web downwardly and forwardly of the structure to the striking plate.

5. In a railway vehicle end structure, a member of Z-shaped cross section extending from side to side of the structure, a web extending outwardly and downwardly from the upper flange of the member and then inwardly, said member and web forming a substantially hollow beam-like end sill, each end of the sill being turned upwardly to form an upright corner post base with the webs extended and merged to complete a box-like cross section.

6. In a railway vehicle end structure, an end sill the cross section of which includes horizontal webs spaced apart and an upright web connecting said horizontal web, said webs extending from side to side of the structure and then turning upwardly and being connected to form box section corner post members.

7. In a railway vehicle end structure, an end sill including a member of Z-shaped cross section extending from end to end of the sill and then turned upwardly to form corner post members, there being a web integral with the edge of the upper of the Z-flanges and extending downwardly and outwardly and then inwardly to form hollow beam-like structure of varying width and depth throughout the length of the sill.

8. In a railway vehicle end structure, webs forming an inverted U section extending lengthwise of the structure with its ends turned upwardly to form the bases of corner posts, there being a flange on one leg of the U section extending inwardly of the end structure and cooperating with the leg to form a continuous horizontal and upright angular recess, and a vehicle body end wall with its lower and end marginal portions seated in said recess.

9. In a railway vehicle underframe, draft sills, and an end member extending transversely of said sills from side to side of the underframe and including a horizontal web at the level of the top of said sills, a vertical web extending upwardly therefrom, said webs forming an angular recess, a vehicle body end wall seated in said recess, there being a web extending outwardly and downwardly from the upper edge of said vertical web and bracing the parts forming said angular recess.

10. In combination, a railway vehicle underframe and end structure comprising longitudinal center and side sills and hollow end sills extending from side to side of the underframe with their ends forming upwardly extending bases, and separately formed hollow posts with their lower ends fitted into said bases and secured thereto.

11. In combination, a vehicle underframe having side sill webs and corner post webs, and a side wall structure of metal plates, said webs having recesses in their outer faces to receive the adjacent edges of the side wall metal plates, and the plates being welded to the webs.

12. A vehicle underframe combination as described in claim 11, which includes side top rails secured to the tops of the corner post webs, and side stakes secured to the side sills.

13. A railway car underframe comprising in a single casting, center sills, end structures extending transversely of the opposite ends of said center sills, and end post bases projecting upwardly from said end structures above the level of said center sills, each of said end structures including horizontal and upright webs forming a substantially continuous angular recess for receiving the bottom and ends of a car end door.

14. A railway car framing including an underframe as described in claim 13 and separately formed corner posts seated in the post bases and welded thereto and forming continuations of the angular recess.

15. In combination in a railway car, an underframe with side sills and separately formed end

structures extending transversely of said sills and secured thereto and each comprising an end sill with its ends turned upwardly and forming corner posts, each end sill and the associated corner posts being of hollow beam-like cross section and cooperating to form a continuous angular recess exteriorly of the hollow section for receiving the bottom and side edges of a car end door.

16. A railway car combination as described in claim 15, in which the end structure includes a gusset-like web extending inwardly from each corner post and end sill, there being car side plates secured to each side sill and corner post and gusset.

17. In a railway vehicle end structure, an end sill including a main horizontal top web, a floor supporting horizontal web spaced therefrom, spaced upright webs extending respectively along the adjacent edges of said horizontal webs, and a substantially horizontal web connecting the upper edges of said upright webs and forming therewith an inverted U-shaped section, extending lengthwise of the sill, and a vehicle end wall with its lower portions seated against the inner one of said upright webs and braced above its lower edge by said latter-mentioned horizontal web.

18. In a railway vehicle end structure, an end sill including a main horizontal top web, a floor supporting horizontal web spaced therefrom, the adjacent edges of said webs being substantially parallel and said main top web increasing in width from the ends of the end sill towards the middle of the end sill, upright webs extending along the adjacent edges of said horizontal webs, a substantailly horizontal web connecting the upper edges of said upright webs and forming therewith an inverted U-shaped section extending lengthwise of the end sill, for seating an end wall of the vehicle, said latter-mentioned horizontal web merging with a web inclined downwardly from the middle portion of the inner upright web to the outer edge of the middle portion of the main top web.

19. In a railway vehicle end structure, an end sill including a top web, extending generally horizontally and forming a floor support element, and an upright web extending upwardly above said top web and having an upright surface forming a seat for a body end wall, a horizontal web, extending outwardly from the upper edge of said upright web, and an upright web extending downwardly from said latter-mentioned horizontal web with its lower portion merging with said first-mentioned top web.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,842,423	Pflager	Jan. 26, 1932
2,061,318	Gilpin	Nov. 17, 1936