

Nov. 28, 1967

R. L. LICH ETAL

3,354,839

DETACHABLE BULKHEAD POST

Filed April 9, 1965

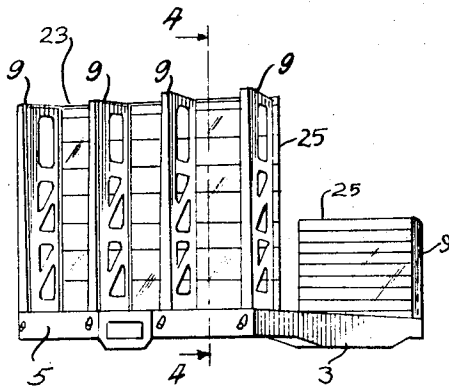


FIG. 1

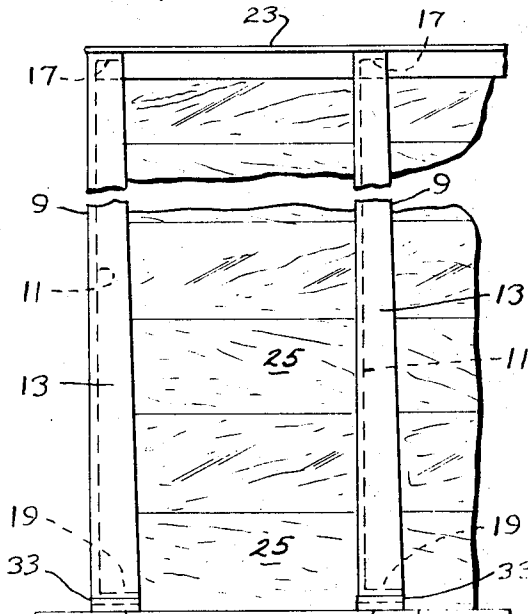


FIG. 2

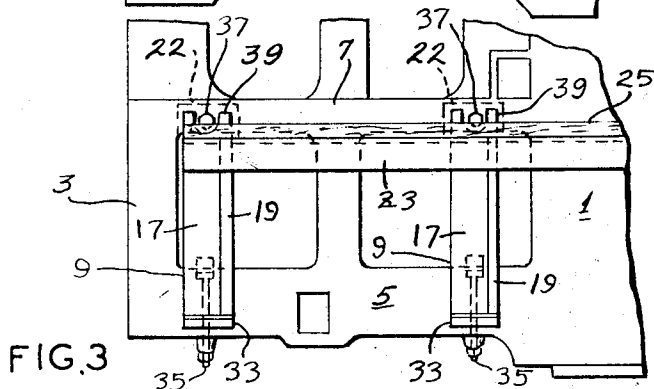


FIG. 3

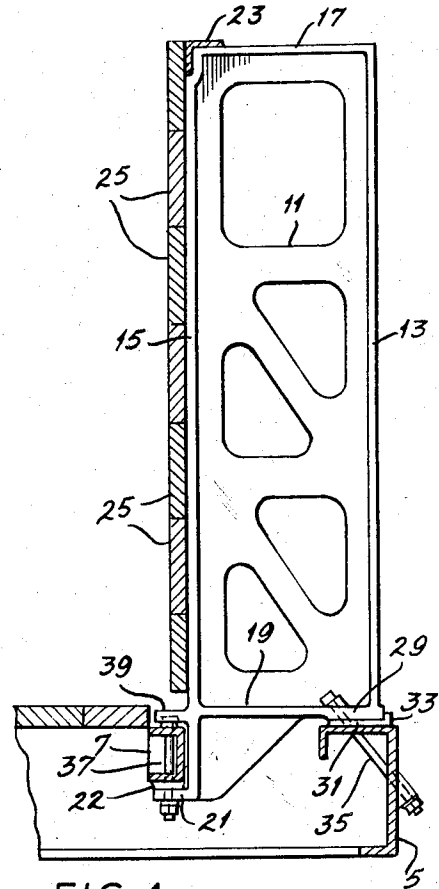


FIG. 4

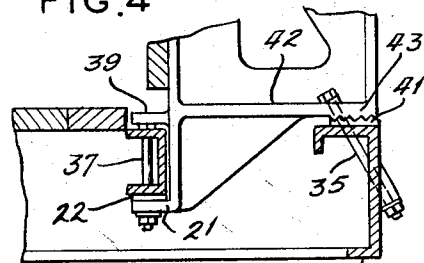


FIG. 5

INVENTORS:
RICHARD L. LICH
ROBERT R. CEASE

BY *Bedell & Burgess*
ATTORNEYS.

1

3,354,839

DETACHABLE BULKHEAD POST

Richard L. Lich, St. Louis, Mo., and Robert R. Cease, Granite City, Ill., assignors to General Steel Industries, Inc., Granite City, Ill., a corporation of Delaware
Filed Apr. 9, 1965, Ser. No. 446,882
5 Claims. (Cl. 105—376)

The invention relates to railway rolling stock and consists particularly in framing for a vehicle of the flatcar type with detachable bulkheads.

For some types of lading, e.g., gypsum wallboard, plywood sheets, and the like, flatcars are provided with permanently affixed bulkheads to prevent shifting of the lading lengthwise of the car responsive to acceleration and retardation of the car. For other types of lading, particularly where end loading is desirable or where an excessively long load is carried, requiring several cars to support it, flatcars without bulkheads are necessary. The requirements of both types of service require railroads to operate and maintain large fleets of both types of flatcars. While removable bulkheads have been proposed, none of them has provided the strength and the resistance to shifting of the lading presented by permanently affixed bulkheads.

It accordingly is a main object of the present invention to provide an easily detached and secured removable and replaceable bulkhead having the strength and resistance to shifting of the lading equivalent to that of permanently affixed bulkheads of, e.g., Schieler et al. Patent 2,640,443.

The foregoing and additional objects and advantages are achieved by the bulkhead construction described hereinafter and illustrated in the accompanying drawing, in which:

FIG. 1 is a perspective view of a flatcar underframe equipped with bulkheads in accordance with the present invention.

FIG. 2 is a fragmentary end view of the car illustrated in FIG. 1.

FIG. 3 is a fragmentary top view of the end portion of the car illustrated in FIG. 1, showing the method of attachment of the bulkhead to the underframe thereof.

FIG. 4 is a longitudinal vertical sectional view along line 4—4 of FIG. 1.

FIG. 5 is a longitudinal vertical sectional view corresponding to FIG. 4 but of a modified form of the invention.

The vehicle has an underframe comprising longitudinally extending center sill 1, side sills 3, transversely extending outer end sills 5 and inner end sills 7 spaced a short distance inwardly lengthwise of the car from the outer end sills.

The bulkhead comprises four upright posts 9 of channel cross section preferably of cast steel construction spaced apart substantially equal distances throughout the width of the car and having a web 11 extending lengthwise of the car, and transverse upright flanges 13 and 15, top flange 17 and bottom flange 19. Inner vertical flange 15 is extended downwardly below bottom flange 19 and its terminal is bent inwardly lengthwise of the car, as at 21, to form a hook-like projection having an upper flat surface engageable with machined pads 22 on the lower surface of the inner end sill 7 when the bulkhead is mounted on the underframe, and the web is extended downwardly below bottom flange 19 to form a triangular gusset 20 connecting flange 19 and the portion of flange 15 depending therefrom. The four posts 9 are connected at their upper inner corners by a transversely extending angle member 23 and are connected throughout their height by bulkhead sheathing which may consist of planks 25 bolted or otherwise suitably secured to inner flanges 15 of several posts so as to form with the posts a rigid bulkhead assembly.

2

For securing the bulkheads to the underframe, the outer ends of the post bottom flanges 19 are formed with a downwardly projecting flat pad 29 machined to a predetermined vertical distance from the upper surface of hook 21 and adapted for seating against plates 31 welded to the upper surface of outer end sill 5 and each formed with an upstanding abutment flange 33 on its outer margin for abutting engagement with the vertical end surfaces of pads 29. Because of the dimensional variations which occur in castings, care is taken in machining the posts to assure that on all of the posts, the vertical distances from the top of hook 21 to the bottom of pad 29 and the horizontal distance between the upper flat surfaces of hook 21 and the end surfaces of pads 29 are uniform. In order to provide complete interchangeability between bulkheads and underframes, plates 31 of suitable thickness to make the vertical distance between their upper surfaces and the bottom surfaces of inner end sill pads 22 equal are applied to the underframe and are positioned lengthwise thereof in accordance with the longitudinal dimension above mentioned. The bulkhead is held in assembled relation with the underframe by tension elements, preferably bolts 35 extending downwardly and outwardly lengthwise of the car and passing through the bottom flanges 19 of the posts and the upright web of outer end sill 5. The inclined disposition of bolts 35 causes them to exert a horizontal force component on the posts, drawing the latter against abutment flanges 33, as well as a vertical component anchoring the posts against the horizontal face of pads 31. The engagement of abutments 33 with the vertical end surfaces of post pads 29 prevents longitudinal shifting of the posts away from the inner end sill and consequent vertical disalignment of hook 21 and the inner end sill 7. The posts are each maintained in upright position by a vertical bolt 37 passing through the inner end sill 7 and hook like projection 21 and holding the latter against inner end sill pad 22. For preventing disassembly of the structure in the event of failure of bolts 37, bifurcated safety lugs 39 are formed on the inner surfaces of inner flanges 15 of posts 9 and are spaced a sufficient distance above hook-like projections 21 to provide some vertical clearance relative to the upper surface of inner end sill 7 to facilitate assembly.

From the foregoing it will be evident that any force exerted by the lading against surface 25 of the bulkhead will be resisted by the cooperation of hook-like projection 21 with the bottom pads 22 of inner end sill 7, any tendency of the posts 9 to move lengthwise of the car out of engagement with the inner end sill being opposed by the engagement of flanges 33 on end sill support plates 31 with the vertical surface of pads 29 on the bottom flange 19 of the end posts and that the latter parts will be held constantly in engagement by diagonal bolts 35.

With this construction, an end post assembly may be removed from a flatcar underframe solely by releasing bolts 35 and 37 and, with the aid of a crane, lifting the assembly out of the underframe. Conversely, the bulkheads may be reassembled with underframes by simply repositioning any bulkheads on underframes with the aid of a crane or hoist, inserting bolts 35 and 37 and tightening the nuts thereon. Because of the interchangeability noted above, any bulkhead constructed according to the invention can be applied to any underframe so arranged.

A modified form of the invention is shown in FIG. 5 in which the parts are generally similar to those in the previous embodiment except for the mode of attachment of the posts to the end sill 40. In this embodiment, plate 31 is eliminated and the upper surface of end sill 40 is formed with a series of transverse serrations 41, the bottom of the end post bottom flanges 42 being similarly serrated as at 43, the engagement of the serrations preventing lengthwise movement of the posts relative to the

underframe and providing a means for adjustment of the posts lengthwise of the underframe. As in the embodiment of FIGS. 2-4, the post is held in engagement with end sill 40 by means of a diagonal bolt 35.

The details of the bulkheads and of the underframes may be varied substantially without departing from the spirit of the invention and the exclusive use of those modifications coming within the scope of the appended claims is contemplated.

What is claimed is:

1. Vehicle framing comprising an underframe having a pair of longitudinally spaced transversely extending members and an upright post of substantial depth lengthwise of the vehicle in cross section and having a lower portion overlyingly engaging one of said underframe members and another lower portion projecting away from said one member and underlyingly engaging the other of said underframe members, upstanding abutment means on the top of said one underframe member facing in the direction of said other underframe member and engaging a transverse surface of said post facing away from said other underframe member whereby to prevent movement of said post lengthwise of the underframe away from its underlying engagement with said other underframe member, another transverse surface of said post facing said other underframe member and engageable therewith to prevent movement of said post from its overlying relation with said one member, and means detachably securing said post to said underframe members and in engagement with said abutment means, said securing means being substantially free from shear stresses lengthwise of the vehicle by reason of the engagement of said post and abutment, said securing means including a bolt inclined lengthwise of the vehicle downwardly and in the direction of said one member from said other member, said bolt being detachably secured to said post and to a portion of said one member spaced from said abutment and holding said post in engagement with said one member and with said abutment means thereon, said securing means further including a substantially upright bolt passing through said underlying post portion and said other underframe member and holding said underlying portion in engagement with said other underframe member, there being a third portion of said post overlying said second member and normally vertically spaced therefrom for

preventing substantial vertical separation of said underlying portion from said second member when said post is in engagement with said abutment means on said first member.

2. Vehicle framing according to claim 1 in which there are a plurality of said posts spaced apart from each other transversely of the vehicle and transversely connected to form a rigid transverse upright bulkhead, the upper surface portions of said one underframe member and the lower surface portions of said other underframe member which engage said lower portions of said posts being spaced apart a predetermined uniform vertical distance, and the vertical distances between the lower portions of said post which overlyingly and underlyingly respectively engage said underframe members are similarly vertically spaced.

3. Vehicle framing according to claim 2 in which separate plates are rigidly secured to the top of said one member and provide the surface portions thereof engaging the lower surfaces of said posts, said plates being of such thickness to render uniform the vertical distances between the bottom surface portions of said other member and the post engaging surfaces of said plates.

4. Vehicle framing according to claim 3, in which said abutment means comprise transverse upright flanges on the ends of said plates remote from said other underframe member.

5. Vehicle framing according to claim 1 in which said abutment means comprises opposing upwardly and downwardly facing serrated surfaces on said one underframe member and on the portion of said post thereoverlying.

References Cited

UNITED STATES PATENTS

1,049,655	1/1913	Boller et al.	105-369
1,247,822	11/1917	Gregg	105-404
1,269,963	6/1918	Schade	238-287
2,076,019	4/1937	Fifield	238-283
2,127,403	8/1938	Grosser	238-288
2,640,443	6/1953	Schieler et al.	105-404
2,819,688	1/1958	Hall	105-369

ARTHUR L. LA POINT, *Primary Examiner*.

45 DRAYTON E. HOFFMAN, *Examiner*.