

Jan. 6, 1959

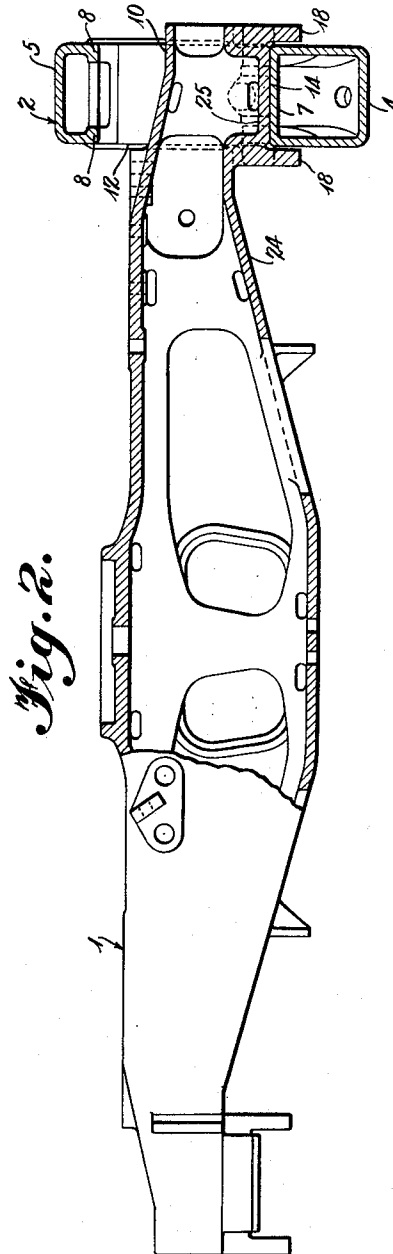
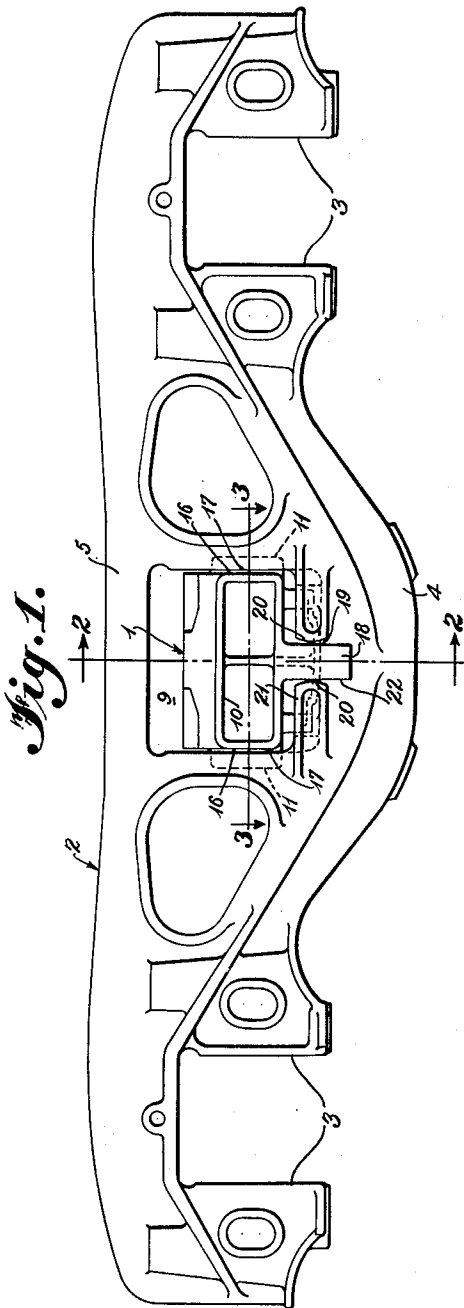
E. H. BLATTNER

2,867,177

RAILWAY TRUCK

Filed Nov. 23, 1953

3 Sheets-Sheet 1



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Fig. 3.

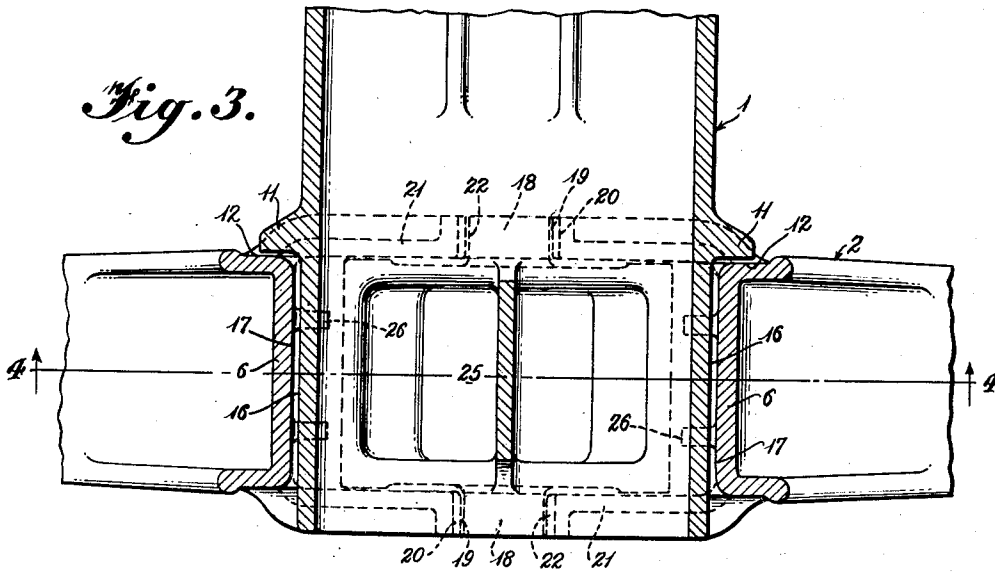
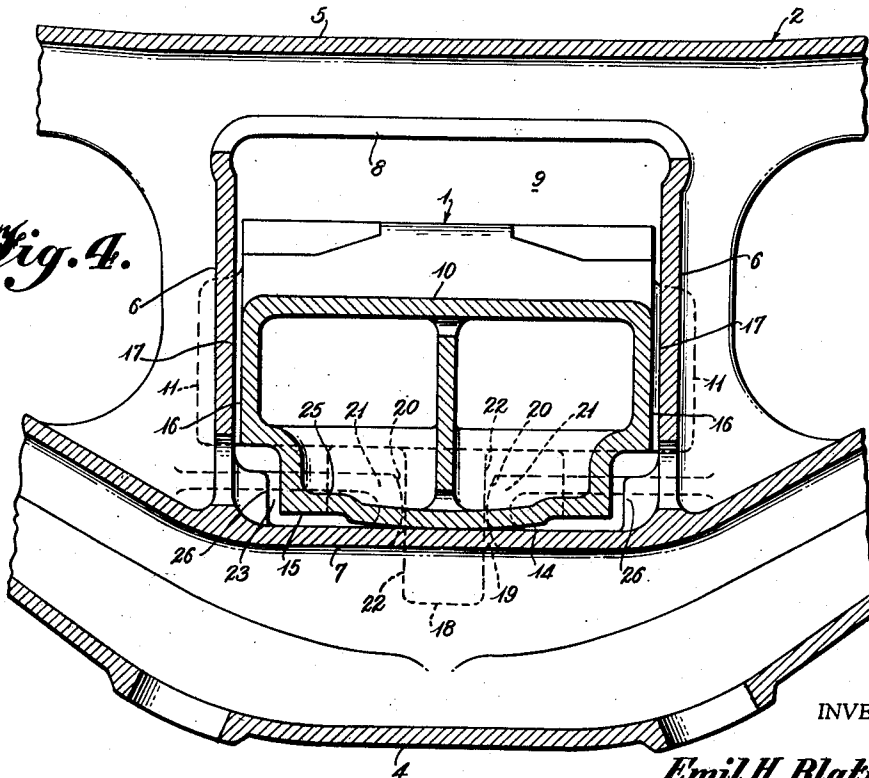


Fig. 4.



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Fig. 5.

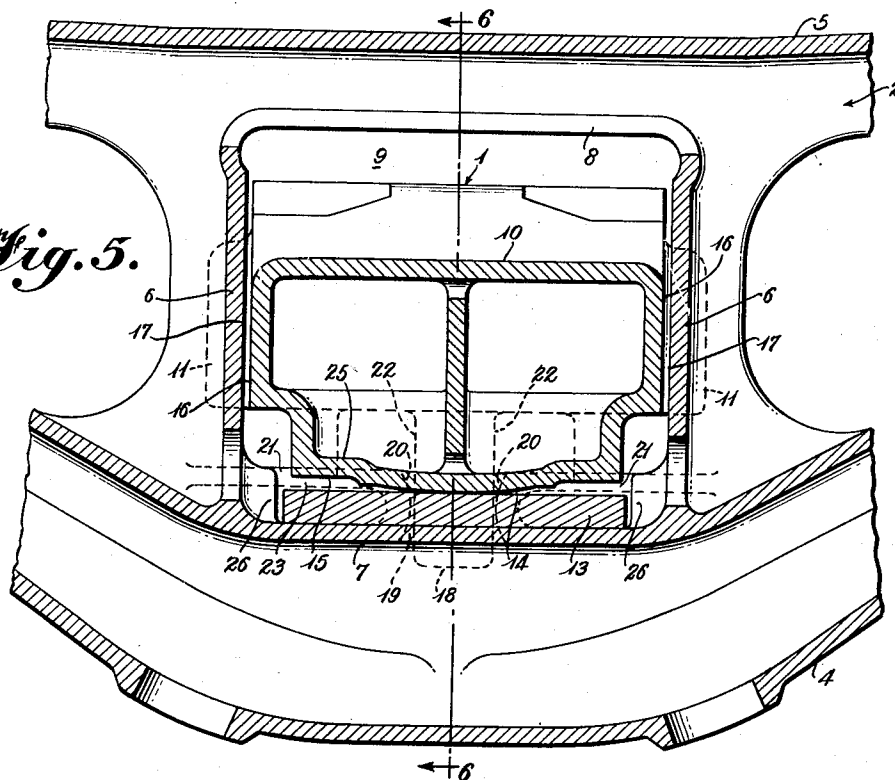
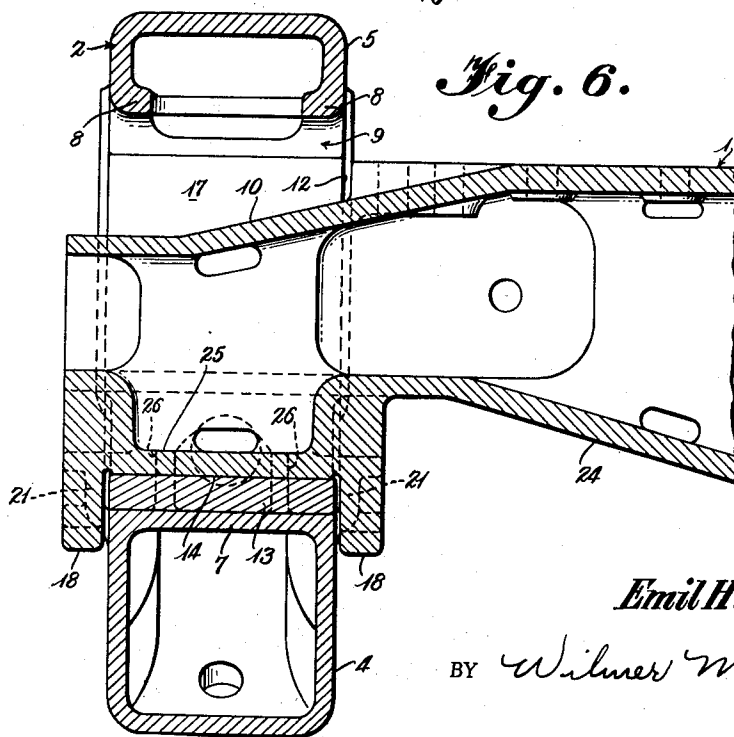


Fig. 6.



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2,867,177

RAILWAY TRUCK

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Application November 23, 1953, Serial No. 393,782

6 Claims. (Cl. 105—203)

This invention relates to railway trucks and more particularly to trucks of the type in which the side frames are resiliently supported on the journal boxes.

The primary object of the invention is to provide an improved connection between the bolster and side frames of a railway truck of the type described, whereby the bolster is enabled to rock laterally relative to the side frames to accommodate their so-called "hobby-horse" action.

Another object of the invention is to provide an improved connection between a bolster and side frame of a truck of the type described in which the bolster, while enabled to rock laterally relative to the side frame, is effectively centered and held against longitudinal movement relative thereto.

An additional object of the invention is to provide an improved side frame and bolster connection in a truck of the type described wherein the parts by which the bolster is enabled to rock laterally, while centered and held against longitudinal movement relative to the side frame, are formed as integral parts of the bolster and side frame.

A further object of the invention is to provide an improved bolster and side frame connection in a truck of the type described, wherein the bolster is directly connected to either side frame in such manner that the height of the bolster relative to the side frame may be adjusted without detriment to the action obtained by the connection.

Other objects and advantages of the invention will appear hereinafter in the detailed description, be particularly pointed out in the appended claims, and be illustrated in the accompanying drawings, in which:

Figure 1 is a side elevational view of a railway truck of the type described, with the journal boxes removed and showing a preferred embodiment of the improved bolster and side frame connection of the present invention.

Figure 2 is an end elevational view of the side frame and bolster of Figure 1, partly taken on the section 2—2 of that figure.

Figure 3 is a fragmentary horizontal sectional view on an enlarged scale taken along the lines 3—3 of Figure 1.

Figure 4 is a vertical sectional view taken along the lines 4—4 of Figure 3.

Figure 5 is fragmentary vertical sectional view corresponding to Figure 4, with a shim shown interposed between the bolster and side frame to adjust the height of the bolster; and

Figure 6 is a vertical sectional view taken along the lines 6—6 of Figure 5.

Referring now in detail to the drawings, in which like reference characters designate like parts, the railway truck to which the present invention pertains is of the type in which the supporting springs are interposed between the side frames and separate journal boxes, rather than between the side frames and bolster, as in the more conven-

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tional truck. Connected by a bolster 1 extending transversely of the truck, the side frames are identical and but one need be shown, the illustrated side frame being designated as 2. Forming no part of this invention, it is sufficient to refer to Barrows Patent No. 2,590,360 dated March 25, 1952, as exemplary of the resilient mounting of journal boxes (not shown) between the jaws 3 of the illustrated side frame.

The illustrated side frame 2 is comprised of a tension member 4 and a compression member 5, connected intermediate their ends by vertically disposed or directed guide columns 6, the latter with the preferably flat or planar upper-surfaced upper web 7 of the tension member and the inturned horizontal flanges 8 of the compression member, defining a window opening 9. Within this window opening fits the end portion or end 10 of the bolster 1, the bolster being limited in its projection into the window opening by wing flanges 11 adapted to engage the inboard walls 12 of the guide columns 6. Within the window opening the bolster seats or rides directly on the upper web 7 of the tension member 4 or on one or more shims 13 which may be interposed between the bolster and side frame for adjustment of the vertical height of the bolster, when necessary to correct coupling height or for other reasons.

In service, the side frames of a railway truck have a longitudinal rocking or so-called "hobby-horse" action due to unevenness of the track, yieldability of the road bed, crossovers and like causes, which result in a momentary relative change in the vertical heights of the front and rear wheels (not shown). This action, if transmitted to the bolster would detrimentally affect the connection between the bolster and the car body (not shown), and it is the elimination of the transmission of this action to the bolster that the improved connection of the present invention has as its main purpose. Relative rocking between bolster and side frame being a necessary incident to such a connection, the required rocking engagement is here provided by a convexly arcuate surface 14, formed on the underside 15 of the end portion 10 of the bolster 1 and extending longitudinally thereof, the surface preferably being cylindrical and having as its center an axis normal to the vertical plane of the side frame and substantially at its center of rocking movement. So that the bolster will be free to rock on its arcuate surface, the walls 16, forming the lateral vertical sides of its end portion 10, are correspondingly spaced inwardly of the confronting transverse faces 17 of the guide columns 6.

Were the connection limited to the described rocking surface engagement and spacing, the bolster would slide or shift laterally within the window opening 9, causing one or the other of its side walls 16 to be jammed against the adjacent of the guide columns 6 and effectively preventing rocking in that direction. Such undesired lateral shifting is prevented in the instant connection by the provision on the end portion 10 of the bolster of a pair of vertically directed tongues or detents 18 depending or downstanding from and projecting below the arcuate surface 14 and overlapping and straddling the side of the tension member 4. Each of these tongues rides or slides in a vertically directed slot, groove or guideway 19, one on each of the inboard and outboard sides of the tension member 4, and each bisecting or centered laterally relative to the window opening 9. Each of the slots is preferably formed or defined by confronting edges 20 of a pair of upturned lips or flanges 21, the several lips upstanding from and bounding the transverse or lateral limits of the upper web 7 of the tension member 4, which forms the bottom or base of the window opening 9. Were the slots 19 and tongues 18 both parallel-sided, a spacing between

their sides would be required to be commensurate with that between the bolster 1 and guide columns 6. To hold the lateral spacing between the tongue and slots to a minimum and at the same time permit the desired rocking action, the sides of one or the other of these mating elements are made curved or arcuate. With the tongues of the illustrated embodiment substantially rectangular in side elevation, the requisite arcuateness is applied to the slots, the vertically directed inner or confronting edges 20 of each of the upturned lips 21, for this purpose being arcuately convex so as to afford a rocking or rolling action with the lateral parallel sides 22 of the tongue 18.

The upstanding inboard and outboard lips 21, with the upper web 7 of the tension member 4, form an upwardly opening basket, seat or pocket 23. To enable the bolster end portion 10 to be received in this pocket and bear, through its arcuate surface 14, against the web 7, the bottom wall 24 of the bolster between or intermediate the tongues 18 is bulged downwardly to form a depending protuberance, bulge or convex portion 25. Projecting sufficiently to encompass the height of the lips 21 and substantially coextensive laterally of the side frame with the pocket, the downwardly bulged portion 25 seats or fits within the pocket 23, with the arcuate surface 14 on its undersurface 15 adapted to engage the base 7 of the pocket. The tongues 18, in turn, are of sufficient length to seat in the associated slots 19 over a considerable range of relative vertical movement between bolster and side frame so as to enable the height of the bolster, and thus the coupling height of the associated car to be adjusted, as necessary, by use of the shims 13, previously described. Not only do the tongues serve to center the bolster within the window opening 9, but by virtue of their overlap and straddling of the sides of the tension member 4, they also serve to limit the motion of the bolster laterally of the side frame, aided in this action by the lips 21 with their overlap of the protuberance 25.

Since the arc of relative rocking movement between bolster and side frame in the "hobby-horse" action of the latter is relatively small, as indicated by the lateral clearance between the bolster and the guide columns 6, the arcuate surface 14 need only cover the central portion, laterally of the bolster, of the underside 15 of the protuberance 25. This surface, preferably, is co-extensive in length, longitudinally of the bolster, with the protuberance so as to provide maximum line contact in the illustrated normal position of the bolster, as well as throughout its range of rocking movement relative to the side frame. As previously mentioned, engagement of the side walls 16 of the bolster with the adjacent guide columns 6 limit the extent of rocking motion of the bolster relative to the side frame. As serving no purpose other than for strength, the undersurface 15 of the protuberance 25 outwardly of the arcuate surface 14 is relatively raised. It will also be noted that the protuberance 25 is inset laterally relative to the side walls 16 of the bolster, thereabove, this inseting being provided to clear positioning ribs 26 which connect the web 7 and the guide columns 6 at the lower corners of the window opening 9 and serve to position the shims 13.

Constructed as above described, the improved bolster and side frame connection of the present invention permits relative rocking laterally of the bolster between the connected members to accommodate the "hobby-horse" action of the side frames, and, due to its limiting surfaces and the extent of the line contact it provides between the bolster and side frame, resists relative movement of the side frame and bolster in any other direction, thus holding the truck in square. Additionally, it makes wheel change a quick and simple matter, this requiring only that the bolster be jacked up sufficiently to clear the tongues 18 of the top web 7 of the tension member 4, when the side frames may be pulled off the bolster ends. Despite its

capabilities, it will be apparent that the improved connection is simple and rugged in construction.

Having described my invention, I claim:

1. In a railway truck having a side frame, a window opening therein and a bolster in said opening, the combination of an arcuate surface on an underside of said bolster and engageable with a bottom of said window opening for rocking of said bolster laterally relative to said side frame, tongue means depending from said bolster, and slot means on said side frame, said tongue means rockably engaging and limited in lateral movement by said slot means for centering said bolster laterally in said window opening while permitting said relative rocking between said bolster and side frame.

2. In a railway truck having a side frame with a window opening, the combination of a bolster member in said opening and supported on a tension member of said side frame, at least one of said members having an arcuate surface engaging said other member for relative rocking of said bolster member and side frame about an axis transverse to said side frame, tongue means depending from said bolster member, and slot means integral with said side frame, said tongue means being rockably engageable with and limited in lateral movement by said slot means for centering said bolster member laterally relative to said window opening while permitting said relative rocking between said bolster member and side frame.

3. In a railway truck having a side frame with a window opening and a bolster in said opening, the combination of a flat surface defining a bottom of said opening, an arcuately convex surface on and extending longitudinally of said bolster within said opening and rockably engaging said flat surface, tongue means on said bolster and projecting below said arcuate surface, and slot means on said side frame receiving and having rocking engagement with said tongue means, said tongue and slot means centering said bolster laterally in said window opening while permitting relative rocking between said bolster and side frame through said convex and flat surfaces.

4. In a railway truck having a side frame, a window opening therein and a bolster in said opening, the combination of an upwardly opening basket seat at the bottom of said window opening, a depending protuberance on said bolster and seated within said seat, a convexly arcuate surface on and extending longitudinally of an underside of said protuberance and having rocking engagement with a bottom wall of said seat, spaced tongues depending from said bolster, said tongues projecting below said protuberance and overlapping and straddling a tension member of said side frame, slots in the inboard and outboard sides of said seat and slidably receiving said tongues, and convexly arcuate surfaces on tongue-confronting sides of said slots, said tongues and slots centering said bolster laterally in said window opening and through said last named arcuate surfaces permitting said bolster to rock relative to said side frame on said first named arcuate surface.

5. In a railway truck having a side frame, a window opening therein and a bolster seated in said opening, the combination of a convexly arcuate surface on an underside and extending longitudinally of said bolster within said opening, said arcuate surface being engageable with a surface on said side frame defining the bottom of said window opening for relative rocking of said bolster and side frame about an axis disposed transversely of said side frame, depending tongue means on said bolster, said tongue means projecting below said arcuate surface and overlapping a tension member of said side frame, and slot means on said side frame and slidably receiving said tongue means, one of said means being arcuately convexly surfaced for rocking engagement with said other means, and said tongue means being centered by said slot means and thereby centering said bolster laterally in said window opening while permitting said relative rocking between said bolster and side frame.

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6. In a railway truck having a side frame, a window opening therein and a bolster in said opening, the combination of an arcuately convex surface on an underside of said bolster and confronting and rockably engageable with a wall defining a bottom of said opening, shim means insertible between said arcuate surface and side frame for adjusting the height of said bolster, a pair of longitudinally spaced depending tongues on said bolster, said tongues projecting below said arcuate surface and overlapping and straddling a tension member of said side frame, guideways at opposite sides of said tension member and each slidably receiving one of said tongues, and convex arcuate surfaces on said guideways confronting

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said tongues for relative rocking motion therebetween, said tongue and guideways centering said bolster laterally in said opening while permitting rocking of said bolster relative to said side frame on said first named arcuate surface.

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