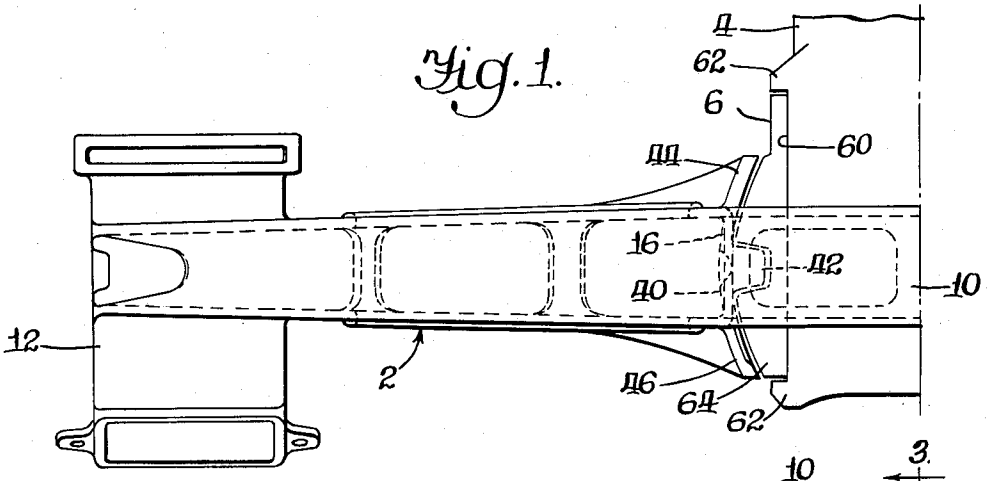
May 8, 1956 C. J. W. CLASEN 2,744,473

CHANGEABLE GAUGE RAILWAY TRUCK

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Fig. 1.



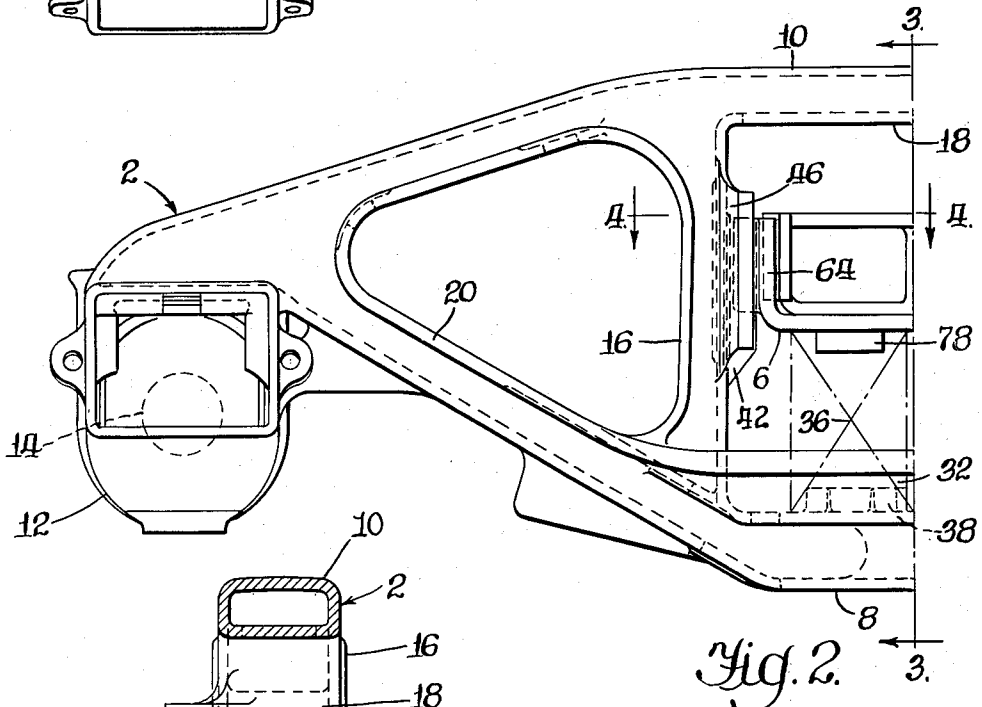


Fig. 2.

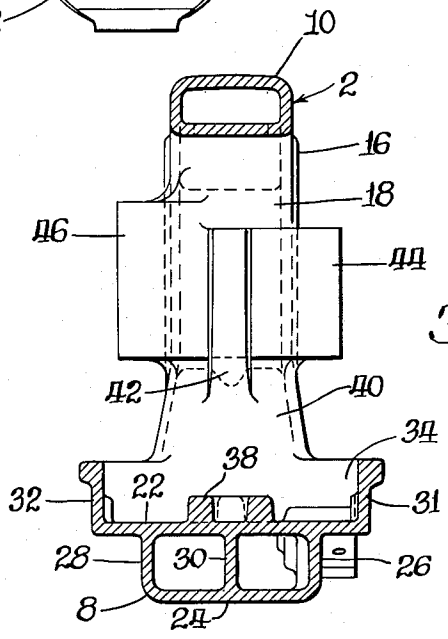


Fig. 3.

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CHANGEABLE GAUGE RAILWAY TRUCK

Filed Oct. 11, 1951 3 Sheets-Sheet 2

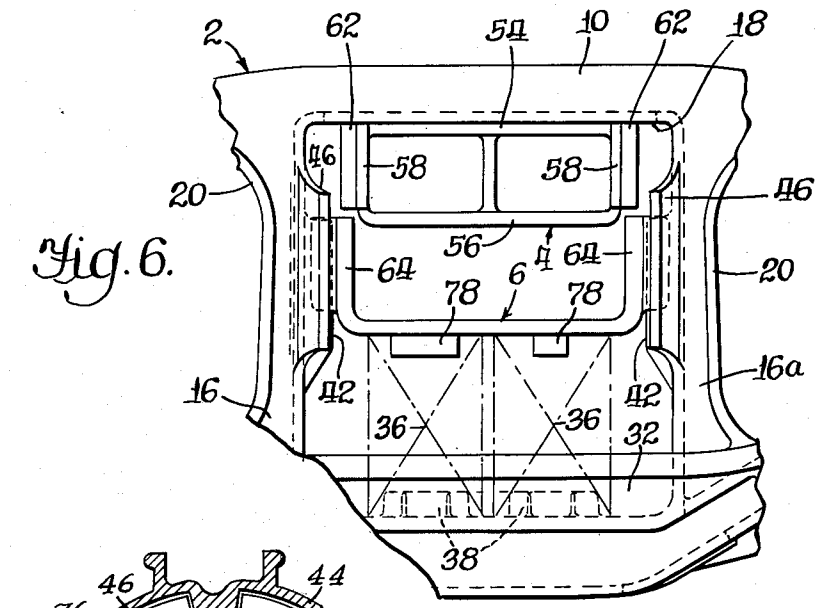


Fig. 6.

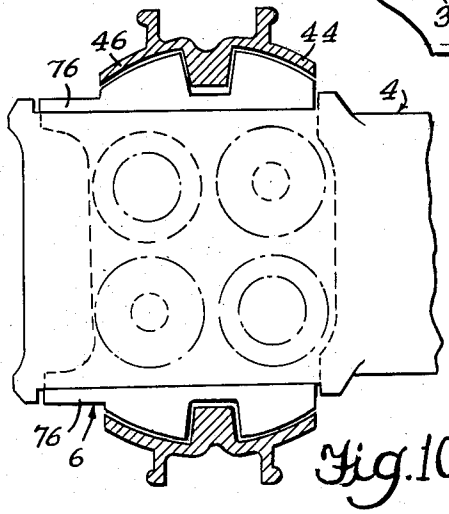


Fig. 10.

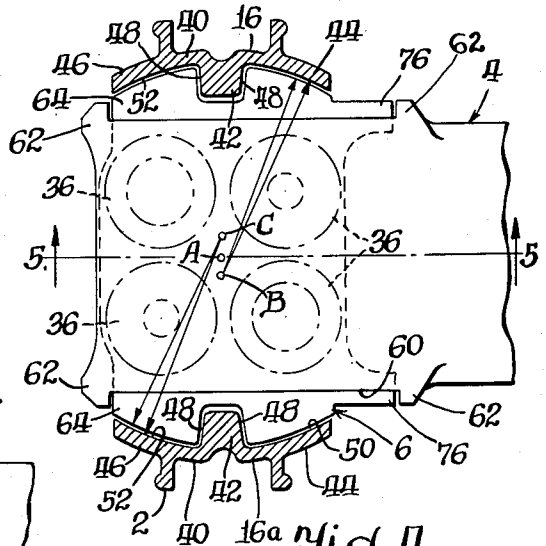


Fig. 11.

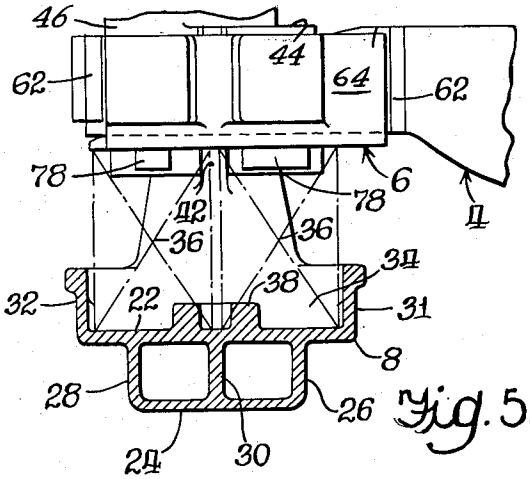


Fig. 5.

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CHANGEABLE GAUGE RAILWAY TRUCK

Filed Oct. 11, 1951 3 Sheets-Sheet 3

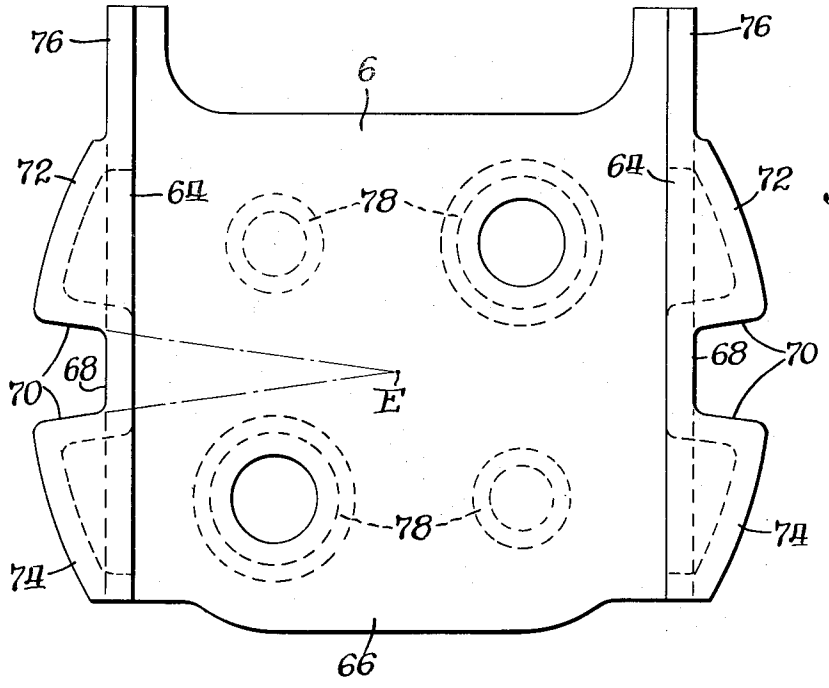


Fig. 7.

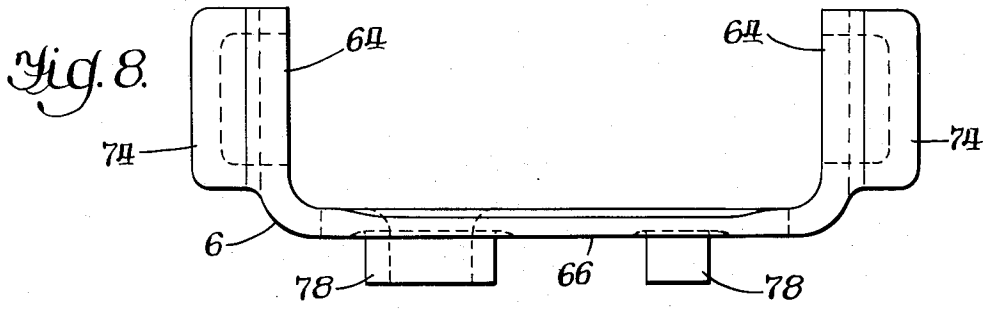


Fig. 8.

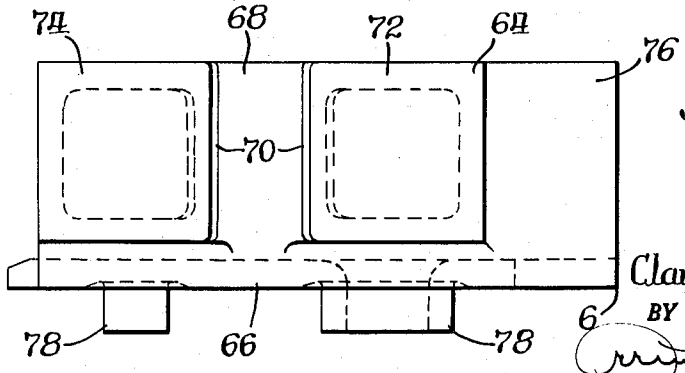


Fig. 9.

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United States Patent Office 2,744,473 Patented May 8, 1956

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CHANGEABLE GAUGE RAILWAY TRUCK

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Application October 11, 1951, Serial No. 250,935

8 Claims. (Cl. 105—178)

This invention relates to a four wheel railway truck and is more particularly concerned with the provision of a spring plankless type of truck including a pair of side frames adapted to be maintained in proper spaced alignment by means of a bolster or other load supporting member.

The present invention contemplates the provision of a spring plankless truck construction embodying a pair of truss type side frames having tension and compression members merging adjacent their ends with integrally formed journal boxes forming the usual means of connection with the journal portions of wheel and axle assemblies, the side frames having spaced vertical columns merging with the tension and compression members to define bolster openings to receive the end of a bolster. The ends of the bolster are interlocked with the vertical columns by means of U-shape adapters extending around the sides and bottom of the bolster to maintain the side frames in proper spaced alignment and to permit vertical movement of the bolster relative to said frames. The bolster is resiliently supported upon the side frame by means of a spring group including a plurality of coil springs interposed between the adapters and the side frame tension members.

This invention contemplates the provision of a bolster and side frame assembly adapted for use with four wheel trucks of different track gauges, the spacing between the side frames being varied by adjusting the positions of the adapters on the bolsters.

This invention further contemplates the provision of an interlocking arrangement between the side frames and the bolster designed to normally maintain same in assembled relation and to permit removal of the bolster without disturbing the adapters on their associated spring groups to facilitate wheel changes.

This invention further contemplates the provision of a bolster and side frame assembly in which the frame columns and adapters are formed with coacting arcuate surfaces permitting relative horizontal rotational or angling movement of the bolster and side frame through a predetermined degree, said columns and adapters also being formed with vertical guide tongues and complementary channels to limit said angling movement.

This invention embodies other novel features, details of construction and arrangement of parts which are hereinafter set forth in the specification and claims and illustrated in the accompanying drawings, wherein:

Figure 1 is a fragmentary top plan view illustrating a truck embodying features of the present invention, only one-half of a side frame being shown as opposite ends are alike.

Figure 2 is a side elevational view of the truck structure illustrated in Figure 1, only one-half of the truck being shown as opposite ends are alike.

Figure 3 is a transverse sectional view taken along the line 3—3 of Figure 2, illustrating the side frame construction.

Figure 4 is a horizontal sectional view taken along the line 4—4 of Figure 2.

Figure 5 is a transverse sectional view taken along the line 5—5 of Figure 4, the bolster and adapter being shown in side elevation.

Figure 6 is a fragmentary side elevational view illustrating the bolster in its raised position for removal of the side frames during wheel change.

Figure 7 is a top plan view illustrating the adapter employed to interconnect a side frame to one end of a bolster.

Figures 8 and 9 are side and end elevational views of same.

Figure 10 is a horizontal sectional view similar to Figure 4 but with the adapter reversed to allow the truck to operate on narrow gauge track.

Referring now to the drawings for a better understanding of the present invention, the four wheel spring plankless truck is shown as comprising a pair of truss type side frames 2—2 maintained in spaced alignment by means of a bolster 4 and a pair of generally U-shape adapters 6—6, the adapters serving to interlock the ends of the bolster to the side frames.

Each side frame comprises a tension member 8 and a compression member 10 of box-like section merging adjacent their ends integrally with journal boxes 12 forming the usual means of connection with the journal portions of wheel and axle assemblies 14. Spaced vertical columns 16—16*a* merge with the tension and compression members to define therewith a bolster opening 18 and a pair of windows 20—20.

Below the bolster opening the tension member 8 comprises an upper chord 22 and a lower chord 24 joined together by inboard and outboard walls 26 and 28, respectively, and a central reinforcing rib 30, the upper chord being widened and formed with inboard and outboard flanges 31 and 32 defining a pocket-like spring seat 34 to receive a spring group which may comprise a plurality of coil springs diagrammatically illustrated at 36. Suitable spring retaining means, such as lugs 38, are provided on the spring seat 34 to maintain the springs 36 in normal relationship.

The inner wall 40 of each side frame column 16—16*a* embodies a central vertical guide tongue 42 and inboard and outboard guide webs 44 and 46 extending from opposite sides of the tongue. The guide tongues are formed with flat inwardly converging surfaces 48—48 lying in diagonal planes intersecting at the vertical axis A on the side frame (see Figure 4), and the guide webs 44 and 46 are formed with arcuate concave surfaces 50 and 52, respectively. The term "vertical axis" denotes the intersection of the longitudinal vertical plane and the transverse vertical plane of the side frame. As shown in Figure 4, the arcuate surfaces on the column 16 have a common axis of curvature at B, while the arcuate surfaces on the column 16*a* have a common axis of curvature at C. It will also be noted that the axes B and C are disposed in a common plane with the vertical axis A of the side frame.

By referring to Figure 3 it will be noted that the lower edges of the inboard and outboard guide webs 44 and 46 are equidistantly spaced from the spring seat 34, that the upper edges of the outboard webs are disposed above the upper edges of the inboard webs and in spaced relation to the compression member 10, and that the guide tongues 42—42 have their upper ends flush with the upper edges of the inboard guide webs and have their lower ends terminating slightly below the lower edges of the inboard and outboard guide webs.

The bolster or load carrying member 4 comprises a hollow box girder having a top wall 54, a bottom wall 56

and connecting side walls 58—58. Adjacent each end of the bolster, each side wall 58 is formed with a recess 60 defined by a pair of spaced vertical flanges 62—62. The recesses 60 at each end of the bolster are preferably in alignment longitudinally and transversely of the bolster to snugly receive the side walls 64—64 of an adapter 6 when the bottom wall 66 of the latter is disposed in abutting engagement against the bottom wall 56 of the bolster.

Each side wall 64 of the adapter is formed with a vertical channel 68 having flat diagonal inwardly converging side walls 70—70 disposed in planes intersecting at E centrally of the adapter, as illustrated in Figure 7. Each side wall is also formed with spaced convex arcuate surfaces 72—74 complementary to their opposed concave arcuate surfaces 50—52 on the guide webs 44—46, and with a flange portion 76 adjacent each surface 72. Suitable bosses 78 project downwardly from the bottom wall 66 of the adapter to engage and maintain the springs 36 in normal relationship. As illustrated in Figure 4, it will be noted that the ends of the bolster 4 are snugly engaged within the adapters 6—6 and that the latter are guided for vertical movement relative to the side frames 2—2.

As heretofore set forth, the present invention contemplates the provision of a four wheel truck adapted for use with different track gauges of, for example, either 60 or 66 inches. To accommodate the truck for use on a relatively wide track gauge, the adapters 6—6 are assembled on the bolster ends in the manner illustrated in Figure 4 in which the flange portions 76—76 are disposed inboardly. In the assembly of the truck for a relatively narrow track gauge, the adapters are mounted on the ends of the bolster with their flange portions 76—76 disposed outboardly.

It will also be noted by referring to Figure 4 in the drawings, that the truck is adapted to be quickly assembled or disassembled to effect a quick wheel change or to adapt the truck for use with a different track gauge. In the assembly of the truck the adapters 6—6 are first positioned upon the spring groups within their respective side frames, and the ends of the bolsters are inserted through the upper ends of the bolster openings 18 above the adapters, as illustrated in dotted outline in Figure 4, and then lowered into interlocking engagement within the adapters. To effect a quick wheel change, it is merely necessary to raise the bolster to the upper ends of the bolster openings to permit withdrawal of the bolster from the side frames, and without disturbing the positions of the spring groups and adapters.

While this invention has been shown in but one form it is obvious to those skilled in this art that it is not so limited but is susceptible of various changes and modifications without departing from the spirit and scope of the claimed invention.

I claim:

1. In a truck, a side frame including tension and compression members and spaced columns integrally connecting said members and defining therewith a bolster opening, a cradle guided for reciprocative movement by said columns, a spring group on said tension member to resiliently support said cradle, said cradle and columns being interconnected by tongues provided on the columns and channels formed in the cradle, each end of said cradle having a pair of spaced convex surfaces, and each column having a pair of spaced concave surfaces one of which extends vertically above the other to receive and engage a pair of said convex surfaces, and a bolster supported upon and interlocked with said cradle, said cradle being U-shaped in top plan view to reversibly engage the bottom and sides of the bolster.

2. In a truck, a side frame including tension and compression members and spaced columns integrally connecting said members and defining therewith a bolster opening, a reversible cradle guided for reciprocative movement by said columns having an edge on one side and spaced extending flanges on the other, a spring group on said tension member to resiliently support said cradle, said cradle and columns being interconnected by tongues provided on the columns and channels formed in the cradle, each end of said cradle having a pair of spaced convex surfaces, each column having a pair of spaced concave surfaces one of which extends vertically above the other to receive and engage a pair of said convex surfaces, a bolster supported upon said cradle, and inboard and outboard abutments on said bolster to engage selectively the edges and flanges of the cradle.

3. In a truck, a side frame including tension and compression members and spaced columns integrally connecting said members and defining therewith a bolster opening, a cradle disposed in said opening between said columns, a spring group flexibly supporting the cradle from the tension member, inboard and outboard concave surfaces and an intermediate tongue on each column facing into the opening, the outboard concave surface on each column extending vertically above the related tongue and inboard concave surface, a groove and a pair of convex surfaces on each side of the cradle complementally engaging the related tongue and concave surfaces whereby said cradle is guided for vertical reciprocative movement between the columns and is removable from the side frame at a point adjacent the top of said opening, a bolster supported on said cradle, said bolster having a recess thereon to reversibly receive the cradle, the axes of curvature of said surfaces being in a common plane disposed longitudinally of the truck and spaced on equal distances from the side edges of the cradle whereupon reversible assembly of the cradle to the bolster will vary the position of the bolster transversely of the frame.

4. In a truck, a side frame including tension and compression members and spaced columns integrally connecting said members and defining therewith a bolster opening having an enlarged portion adjacent its upper end, a reversible cradle guided for reciprocative movement by said columns, a spring group on said tension member to resiliently support said cradle, said cradle and columns being interconnected by tongues provided on the columns and channels formed in the cradle, each end of said cradle having a pair of spaced convex surfaces, and each column having a pair of spaced concave surfaces to receive and engage a pair of said convex surfaces, the upper edge of each tongue and the upper edge of one of the related column concave surfaces being disposed below the upper edge of the other related concave surfaces.

5. In a truck, a side frame including tension and compression members and spaced columns integrally connecting said members and defining therewith a bolster opening having a portion adjacent its upper end enlarged longitudinally of the frame, a cradle guided for reciprocative movement by said columns, a spring group on said tension member to resiliently support said cradle, said cradle and columns being interconnected by tongues provided on the columns and channels formed in the cradle, each end of said cradle having a pair of spaced convex surfaces, each column having a pair of spaced concave surfaces to receive and engage a pair of said convex surfaces, and a bolster supported upon and interlocked with said cradle, said cradle being reversible relative to said bolster, the upper edge of each tongue and the upper edge of the associated concave surfaces being spaced substantially below the upper edge of the other related concave surface.

6. In a truck, a side frame including tension and compression members and spaced columns integrally connecting said members and defining therewith a bolster opening, a reversible cradle guided for reciprocative movement by said columns, a spring group on said tension member to resiliently support said cradle, said cradle and columns being interconnected by tongues provided on the columns and channels formed in the cradle, each end of said cradle having a pair of spaced convex surfaces and each column having a pair of spaced concave

surfaces to receive and engage a pair of said convex surfaces, the upper edge of each tongue and the upper edge of one of the associated concave surfaces being disposed at a lower level than the upper edge of the other related concave surface, and a bolster supported upon and interlocked with said cradle, said cradle being U-shaped in top plan view to engage spaced inboard and outboard abutments on the bolster.

7. In a truck, a side frame including tension and compression members and spaced columns integrally connecting said members and defining therewith a bolster opening, a cradle guided for reciprocative movement by said columns, a spring group on said tension member to resiliently support said cradle, each end of said cradle having inboard and outboard convex arcuate surfaces and each column having inboard and outboard concave arcuate surfaces to receive and engage said convex surfaces, the upper edge of said inboard concave surface being disposed at a lower level than the upper edge of said outboard concave surface, a bolster having spaced inboard and outboard abutments and supported upon and interlocked with said cradle, said cradle being U-shaped to engage the bottom and sides of the bolster between said abutments, the axes of curvature of said surfaces

being in a common plane longitudinal of the truck, and spacing flanges on one of the sides of the cradle adapted to be engaged against either the inboard or outboard abutments on the bolster depending upon the spacing desired between the side frames and the center of the bolster.

8. A bolster supporting adapter comprising column guide surfaces formed of spaced arcuate portions on opposite sides of said adapter, vertical channels between said portions, said adapter having a U-shape as seen in end elevational view, and spaced flange segments protruding from a common side of the adapter, said adapter being U-shaped as seen in top plan view.

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