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2,263,759

SPRING PLANKLESS TRUCK

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2 Sheets-Sheet 1

Fig. 1

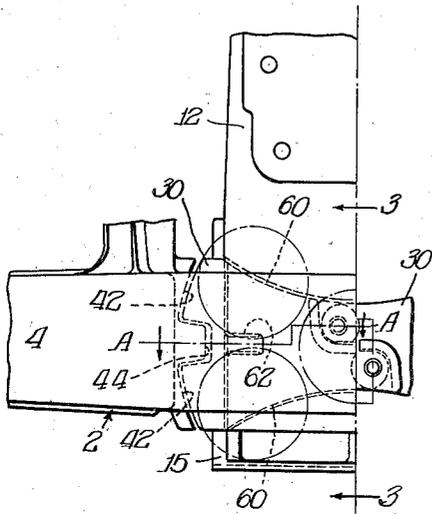


Fig. 3

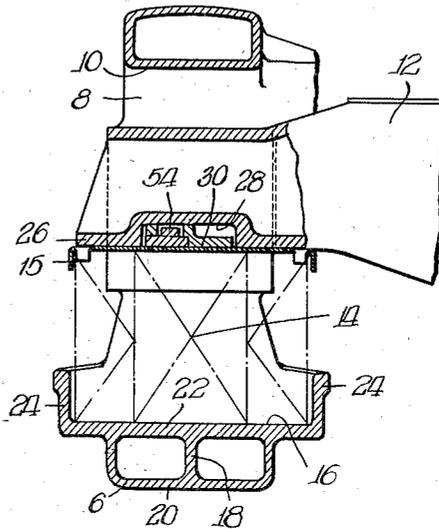


Fig. 2

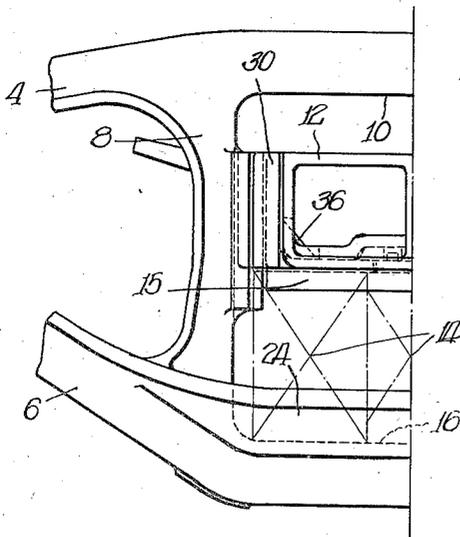
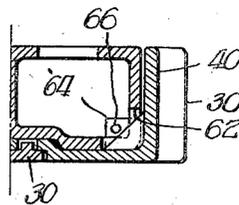


Fig. 2A



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# UNITED STATES PATENT OFFICE

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## SPRING PLANKLESS TRUCK

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8 Claims. (Cl. 105—197.2)

My invention relates to four wheel railway car trucks and more particularly to such trucks of so-called quick wheel change type wherein the bolster and side frame are so connected as to facilitate their assembly or dismantling without disturbing the associated spring group.

An object of my invention is to devise an improvement in the modification of the quick wheel change truck shown in my United States Letters Patent No. 2,188,641, issued January 30, 1940 and entitled "Spring plankless truck." In the said patent I have shown an arrangement wherein a single insert is used at each end of the bolster forming a means of connection between the bolster and the associated side frames. In the arrangement shown in my said patent a portion of the bolster co-acts with the guide columns on the side frame and additional guide surface is afforded by means of the insert. Under certain conditions it is desirable for the engaging guide surfaces to be located only on the side frame and one additional member, either the bolster or the insert. To accommodate such conditions I have devised the improvement shown herein and the said improvement includes certain other features more clearly set forth in the accompanying drawings and specification.

A different object of my invention is to design a novel form of insert member serving as a means of connection between a bolster and an associated side frame, said insert member being formed in a plurality of interlocking parts to facilitate assembly and dismantling.

Figure 1 is a fragmentary top plan view of a truck structure embodying my invention.

Figure 2 is a fragmentary side elevation of the truck structure shown in Figure 1, and Figure 2A is a sectional view taken substantially in the planes indicated by the line A—A of Figure 1.

Figure 3 is a sectional view taken through the truck structure shown in Figures 1 and 2, the section being taken substantially in the transverse plane indicated by the line 3—3 of Figure 1.

Figure 4 is a top plan view of my novel insert member, Figure 4A being a side elevation thereof and Figure 4B an end view taken from the right as seen in Figures 4 and 4A.

Figure 5 is a fragmentary top plan view of a modified form of one end of the insert structure and Figures 5A and 5B are end views and side elevations thereof respectively.

Figure 6 is an end elevation of a further modification of the bolster and insert structure and Figure 6A is a sectional view therethrough, taken

substantially in the plane indicated by the line A—A of Figure 6.

Figure 7 is an end elevation of a modified form of bolster end insert structure and Figure 7A is a sectional view therethrough taken substantially in the plane indicated by the line A—A of Figure 7.

Describing my novel structure in greater detail and referring particularly to the modification shown in Figures 1 to 4 inclusive, the side frame 2 comprises the compression member 4 and the tension member 6 joined by the integral columns 8, 8 forming therewith a bolster opening 10 within which may be received the end of the bolster 12, said bolster end projecting through the opening 10 and being seated upon the spring group diagrammatically indicated at 14, 14 and which includes the top spring plate 15. The spring group 14 is positioned upon the spring seat 16 formed on said tension member 6 beneath said window opening. The tension member 6 beneath said opening has the box section best seen from the view of Figure 3 with a longitudinal center rib 18, a bottom chord 20 and a top chord 22 widened and formed with up-standing flanges 24, 24, thus forming a trough within which the said spring group 14 may be securely seated. The bottom wall 26 of the bolster is recessed transversely thereof as at 28 to overlie the insert members 30, 30, said insert members being afforded interlocking lugs at their abutting ends as more particularly described hereafter. Each insert 30 is an L-shaped structure with a base web 32 and an upright guide portion generally designated 34, the juncture of said web and upright portion being reinforced by the central diagonal rib 36. The upright or guide portion 34 has vertical spaced arcuate portions indicated at 38, 38 with an intervening channel 40, said arcuate portion and intervening channel having a form complementary with that of the engaging guide surface on the column 8 whereon the guide surface is defined by spaced concave faces 42, 42 with an intervening flange 44. At the top of the upright portion 34 is formed the transverse web or shelf 46 defining with the center web and lateral edges of said upright portion a plane surface 48 for abutment against the side wall of the bolster. Each insert 30 is formed at one end with means for interlocking with a similar means of the other insert 30, said means comprising a recess 50 at one side thereof and a projecting lug 52 at the opposite side thereof. On each lug 52 is formed the stud 54 which is receivable in the eye 56 formed for

that purpose in the top wall defining the recess 50. At the bottom web of each insert is formed a central opening 58 serving as a means of engagement with positioning studs (not shown) on the top spring plate 15. The lateral edges of the bottom web of each insert are arcuate in form and complementary, as indicated at 60, 60 with the edges of the recess in the bottom wall of the bolster within which the insert is received, all as best seen in the top plan view of Figure 1. When the insert 30 is assembled relationship beneath the bolster, the rib 36 is received within the transverse slot 62 formed in the bottom and side walls of the bolster for that purpose.

It may be noted that the depth of the vertical portion 34 of each insert is equal to the depth of the bolster end as best seen in the side elevation of Figure 2. Thus the inserts 30 are the sole means of connection between the bolster end and the associated side frame.

In assembly the spring group is positioned upon the spring seat 16 and the inserts 30 are seated thereupon with their adjacent ends in interlocking engagement and the upright portions thereof engaging the complementary portions of the columns. Thereafter the bolster end may be inserted into the bolster opening between the inserts and seated thereon, the inserts being received within the recess in the bottom of the bolster as already described. If desired, the ribs 36 of the insert may be modified to the form shown at 64 in Figure 2A and provided with an opening 66 for reception of a cotter key or retaining bolt by means of which accidental dismantling of the bolster may be prevented. It will be readily apparent to those skilled in the art that the two insert members 30, 30 after assembly operate substantially as a single member more or less similar to the insert member described in my above-mentioned patent with the exception that full length column engaging surfaces are afforded on the inserts of my present modification.

Figure 5 shows a modified form of end connection between the insert members. In this modification the ends of adjacent inserts abut each other along the plane surfaces indicated at 68 and centrally of said abutting end is formed the upright lug 70, a portion of said lug being formed as at 72 along the plane defined by the surface 68. The lug is afforded a transverse eye 74 aligned with the eye of the adjacent lug 70 and affording a means of connection between abutting insert members by the insertion of a cotter key or bolt through said aligned eyes.

Figures 6 and 7 show my novel form of insert adapted for association with a well known form of side frame column guide surface wherein the column is formed with a concave cylindrical bolster engaging surface. In the modification shown in Figures 6 and 6A the insert 76 is recessed in the bottom wall 78 of the bolster 80 in a manner similar to that described for the previous modification. In the present modification, however, the upright portion 82 of the insert is formed with inboard and outboard lateral lugs 84, 84 for abutment with the edges of an associated side frame column and between the said lugs the web 86 presents a convex surface for complementary engagement with its associated column surface. The bolster 80 has the inboard guide lug 88 abutting the inboard edge of the insert 82 and the outboard guide lug 90 abutting the top outboard edge of the insert member. In this modification the insert member is formed with a central

upstanding lug 92 received within the hollow boss 94 formed for that purpose on the bottom wall of the bolster 80 and aligned openings in said lug and boss afford means of securing said insert to said bolster after assembly by insertion therethrough of a key or retaining bolt.

The modification shown in Figure 7A is similar to that shown in Figures 6 and 6A, differing therefrom only in the omission of the connecting lug and boss between the bolster 95 and the insert. Instead of such a connection the modification of Figures 7 and 7A shows an insert 96 with a bottom web upturned at its inner end as at 98 along the edge which affords abutment with a similar insert 96 at the opposite side of the bolster 95 and the upturned flange 98 is received within the slot 100 formed for that purpose in the bottom wall of the bolster 95 longitudinally thereof. The upright portion 102 of the insert 96 is identical with that shown in the modification of Figure 6. If desired, the abutting flanges 98 of the inserts may be extended above the bottom wall of the bolster and formed with aligned eyes to accommodate a retaining key therein similar to other keying means shown herewith.

It is to be understood that I do not wish to be limited by the exact embodiments of the device shown which are merely by way of illustration and not limitation as various and other forms of the device will, of course, be apparent to those skilled in the art without departing from the spirit of the invention or the scope of the claims.

I claim:

1. In a railway car truck, a side frame having a compression member, a tension member, and spaced columns defining a bolster opening, guide surfaces on said columns centrally thereof including a concave cylindrical surface, a spring group seated on said tension member beneath said opening, a bolster end projecting through said opening, and a bolster interlocking member seated on said spring group adjacent each column with a horizontal web recessed in the bottom of said bolster end, a vertical portion having guide means complementary in form to the guide means on the adjacent column and including a convex cylindrical portion, each of said vertical portions having guiding engagement with said columns for the full depth of said bolster end, said bolster end having vertical overlapping relationship with said members for a depth less than the clearance between the top of said bolster end and said compression member to permit assembling or dismantling therethrough of said bolster end while said spring group and interlocking members are in normal assembled relationship, each of said interlocking members extending transversely of said bolster for abutment with each other adjacent the longitudinal center line of said bolster end, and means on said interlocking members adjacent their abutting ends in overlapping relationship longitudinally, laterally and vertically of said truck to prevent movement of translation with respect to each other.

2. In a railway car truck, a side frame having a tension member, a compression member, and spaced columns forming therewith a bolster opening, a spring group supported on said tension member beneath said bolster opening, a bolster end projecting through said opening, each of said columns having guide means thereon, bolster interlocking members seated on said spring group with portions recessed in the bottom of said bolster, each of said interlocking members hav-

ing an upright portion extending for approximately the depth of said bolster end between said bolster end and the adjacent guide column, each of said interlocking members having guide means of complementary form with the guide means on said column and cooperating therewith, said bolster having means in vertical overlapping relationship with each of said interlocking members for a distance less than the clearance between the top of said bolster and said compression member, whereby said bolster end may be assembled or dismantled through the top of said opening while said interlocking members are in assembled position upon the spring group, and means on said interlocking members overlapping each other laterally, longitudinally and vertically of said truck within said bolster recess to prevent relative movement therebetween when in normal assembled relationship.

3. In a railway car truck, a side frame having a tension member, a compression member, and spaced columns forming therewith a bolster opening, a spring group supported on said tension member beneath said bolster opening, a bolster end projecting through said opening, each of said columns having guide means thereon, bolster interlocking members seated on said spring group with portions recessed in the bottom of said bolster end, each of said interlocking members having an upright portion extending for substantially the depth of said bolster end between said bolster end and the adjacent guide column, each of said interlocking members having guide means of complementary form with the guide means on said column and cooperating therewith, said bolster having means in vertical overlapping relationship with each of said interlocking members for a distance less than the clearance between the top of said bolster and said compression member, whereby said bolster end may be assembled or dismantled through the top of said opening while said interlocking members are in assembled position upon said spring group, and overlapping means on said interlocking members within the recessed portion of said bolster securing said members against movement of translation with respect to each other.

4. In a railway car truck, a side frame having a tension member, a compression member, and spaced columns forming therewith a bolster opening, a spring group seated on said tension member beneath said bolster opening, a bolster end projecting through said opening, each of said columns having guide means thereon, bolster interlocking members seated on said spring group and recessed in the bottom of said bolster, each of said interlocking members having an upright portion extending for the full depth of said bolster end and between said bolster end and the adjacent guide column, each of said interlocking members having guide means of complementary form with the guide means on said column and cooperating therewith, said bolster having means in vertical overlapping relationship with each of said interlocking members for a distance less than the clearance between the top of said bolster and said compression member, whereby said bolster end may be assembled or dismantled through the top of said opening while said interlocking members are in assembled position upon said spring group, and means on each member extending transversely beyond the longitudinal center line of said bolster and adapted to interlock said members to prevent relative movement therebetween.

5. In a railway car truck, a side frame having a tension member, a compression member, and spaced columns forming therewith a bolster opening, a spring group supported on said tension member beneath said bolster opening, a bolster end projecting through said opening, each of said columns having guide means thereon, and bolster interlocking means seated with said bolster end on said spring group and recessed in the bottom wall of said bolster, each of said interlocking means having an upright portion extending for the full depth of said bolster end and between said bolster end and the adjacent guide column, each of said interlocking means having guide means of complementary form with the guide means on said column and cooperating therewith, each of said interlocking means having securing members certain of which extend through said bottom wall and others of which have overlapping relationship to prevent relative movement of said interlocking means, said bolster having means in vertical overlapping relationship with said securing members for a depth less than the clearance between the top of said bolster and said compression member whereby said bolster end may be assembled or dismantled through the top of said opening while said interlocking means are in assembled position upon said spring group.

6. In a railway car truck, a side frame having a compression member, a tension member, and spaced columns forming therewith a bolster opening, guide means on said columns, a spring group on said tension member beneath said opening, a bolster end extending through said opening, and a plurality of bolster interlocking members seated with said bolster end on said spring group, each of said members having complementary guide means engaging the guide means on said column for substantially the depth of said bolster end, said bolster end having vertical overlapping relationship with portions of said members for a depth less than the clearance between the top of said bolster end and said compression member to permit assembling or dismantling of said bolster end through the top of said opening while said spring group and said members are in normal assembled relationship, said interlocking members having horizontal portions recessed within the bottom wall of said bolster end and extending transversely thereacross and each presenting means for overlapping interengagement with the corresponding means on the other horizontal portion adjacent to the longitudinal center line of said bolster end, and upstanding means on said members extending through said bottom wall and cooperating with said horizontal portions to prevent excessive lateral play of said members with respect to said bolster end.

7. In a railway car truck, a side frame having a tension member, a compression member, and spaced columns forming therewith a bolster opening, a spring group seated on said tension member beneath said bolster opening, a bolster end projecting through said opening, each of said columns having guide means thereon, bolster interlocking members seated with said bolster end on said spring group and recessed in the bottom of said bolster, each of said interlocking members having an upright portion extending for the full depth of said bolster end and between said bolster end and the adjacent guide column, each of said interlocking members having guide means of complementary form with the guide means on said column and cooperating therewith, said bolster having means in vertical overlapping re-

relationship with each of said interlocking members for a distance less than the clearance between the top of said bolster and said compression member, whereby said bolster end may be assembled or dismantled through the top of said opening while said interlocking members are in assembled position upon said spring group, and means adjacent the longitudinal center line of said bolster interlocking said members.

8. In a railway car truck, a side frame having a tension member, a compression member, and spaced columns forming therewith a bolster opening, a spring group seated on said tension member beneath said bolster opening, a bolster end projecting through said opening, each of said columns having guide means thereon, bolster interlocking members seated with said bolster end on said spring group and recessed in the bottom of said bolster, each of said interlocking

members having an upright portion extending for the full depth of said bolster end and between said bolster end and the adjacent guide column, each of said interlocking members having guide means of complementary form with the guide means on said column and cooperating therewith, said bolster having means in vertical overlapping relationship with each of said interlocking members for a distance less than the clearance between the top of said bolster and said compression member, whereby said bolster end may be assembled or dismantled through the top of said opening while said interlocking members are in assembled position upon said spring group, and means interlocking said members with each other and with said bolster, whereby said bolster and members act as a unit when assembled.

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