

Jan. 26, 1932.

G. F. COUCH

1,843,065

RAILWAY TRUCK

Filed Oct. 5, 1929

2 Sheets-Sheet 1

Fig. 2.

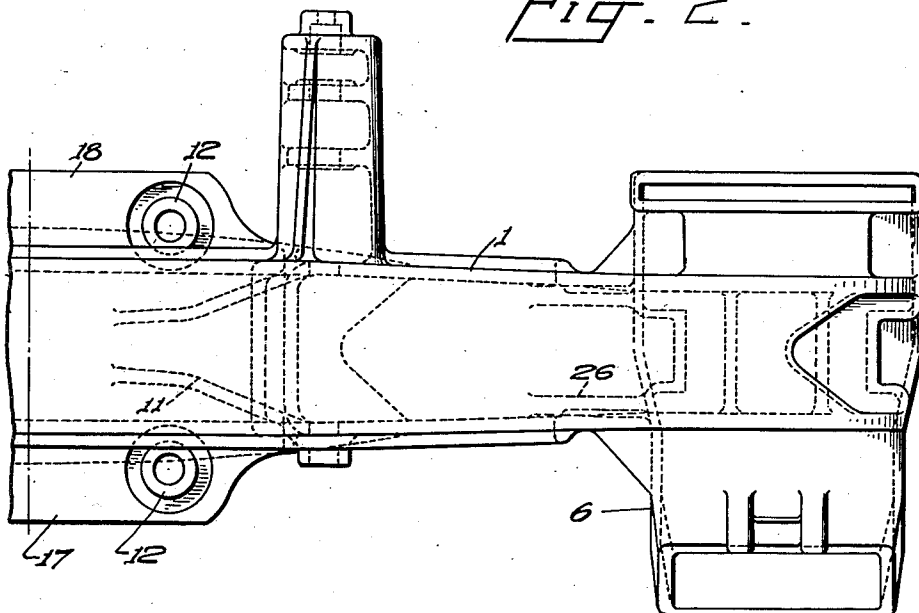
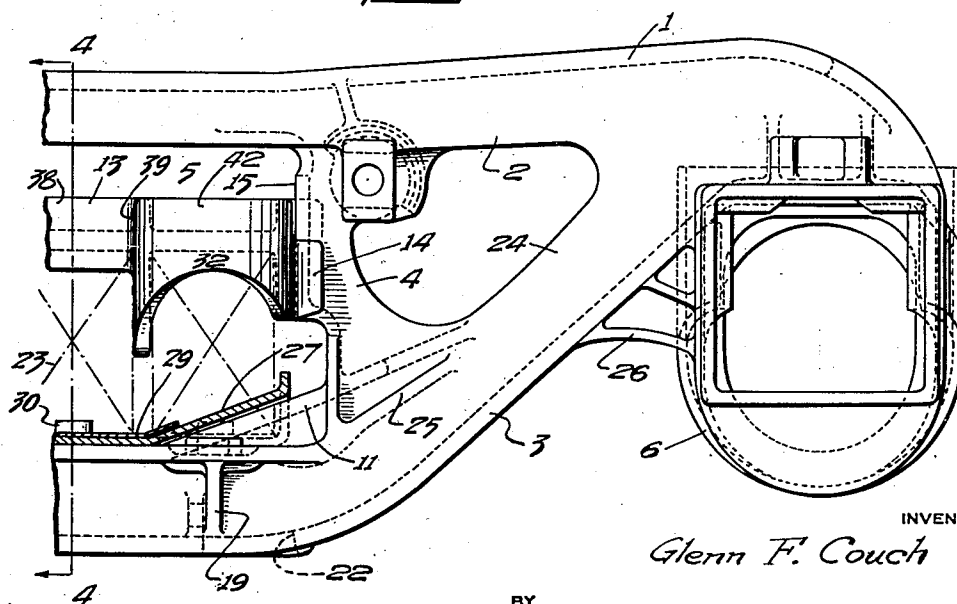


Fig. 1.



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Fig. 3.

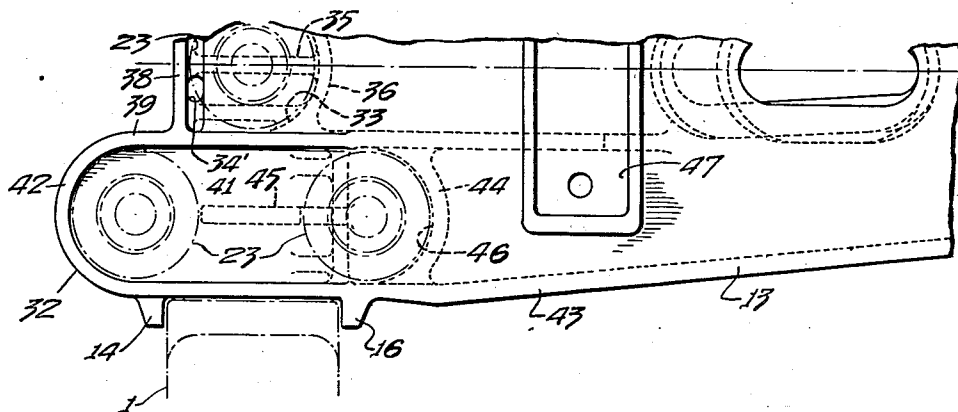
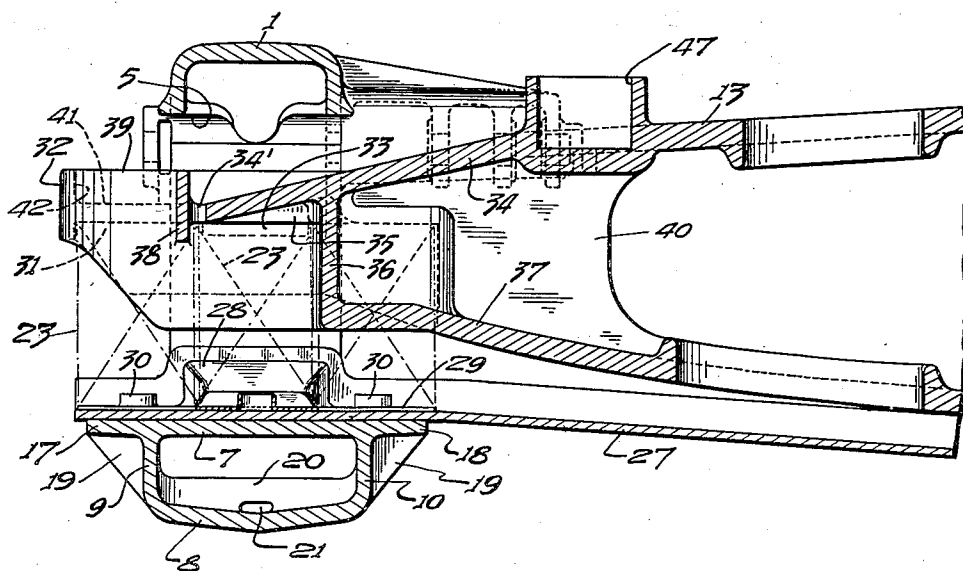


Fig. 4.



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RAILWAY TRUCK

Application filed October 5, 1929. Serial No. 397,598.

This invention relates to railway trucks and, more particularly, to the construction of the side frames and bolsters thereof.

The principal object of my invention, generally considered, is the provision of an improved railway truck involving side frames of increased strength associated with a bolster supported thereby at a relatively low elevation, said bolster being so constructed that it is adapted for insertion in bolster openings in the frames of decreased depth, while at the same time being supported by standard bolster springs.

Another object of my invention is to provide a side frame formed as a modification of the type described and claimed in the Barrows Patent No. 1,652,808 of December 13, 1927, in which the side portions of the compression member slope upwardly and outwardly to give a relatively shallow frame and provide for relatively low positioning of the bolster.

A further object of my invention is to provide a bolster for railway trucks adapted to be supported on standard springs at a relatively low level and for that purpose formed with its ends pocketed to receive springs engaging the bolster at the top or near the top wall thereof, the bottom of the bolster being normally disposed close to the spring plank and thereby adapted to limit compression of the springs.

A still further object of my invention is to provide a bolster for railway trucks having ends bifurcated or formed with separated extensions overlying the outermost supporting springs and contacting said springs on the top web or wall thereof, the extensions and said wall being reinforced by relatively deep flanges or webs extending below said wall between the bolster springs, those portions of the bolster between the extensions at the ends thereof having spring pockets formed below the downwardly and outwardly sloping top wall of the bolster which, immediately over the springs, is provided with downwardly extending tapered ribs presenting substantially horizontal bottom faces or edges for engaging the top of the springs.

Other objects and advantages of the in-

vention relating to the particular arrangement and construction of the various parts will become apparent as the description proceeds.

Referring to the drawings illustrating my invention, the scope whereof is defined by the appended claims,

Figure 1 is a fragmentary side elevation of a railway truck embodying my invention.

Figure 2 is a fragmentary plan of a truck side frame shown in Figure 1.

Figure 3 is a fragmentary plan of the truck bolster shown in Figure 1.

Figure 4 is a fragmentary transverse sectional view of the truck on the line 4-4 of Figure 1, looking in the direction of the arrows.

Referring to the drawings in detail, like parts being designated by like reference characters, there is shown a portion of a truck comprising a pair of side frames 1, only one of which is illustrated. Said frames are formed preferably of cast steel and are preferably, though not necessarily, a modification of the type described and claimed in the Barrows Patent No. 1,652,808. Each frame 1 comprises a compression member 2, a tension member 3 and bolster guide columns or strut portions 4 spacing intermediate portions of said compression and tension members leaving a window or bolster opening 5 therebetween. The compression and tension members, in the present embodiment, are shown joined to each other and to integral journal boxes 6, only one of which is shown, adjacent the ends thereof, but if desired, the ends may be provided with jaws (not shown) adapted to receive associated journal boxes therein.

The tension member 3 between the bolster guide columns is generally box shaped in section and comprises an upper web 7 forming a spring plank seat portion, a lower web 8 and side webs or walls 9 and 10 respectively. For rigidifying and strengthening the side frame and particularly the tension member at the junctions between the tension member and bolster guide columns, said tension member is preferably upwardly convoluted or embossed, preferably along the longitudinal

center line of the frame adjacent the junctions with the bolster guide columns to form upwardly diagonally disposed web portions 11 which start near the center of the spring plank seat or upper web 7 and extend diagonally upward through the bolster guide columns toward the ends of the frame. This construction results, in effect, in a bifurcation of the upper web portion of the tension member with the production of a triangular or inclined reinforcements, at the junction between the tension member and bolster guide columns, and in addition forms embossments with which the spring plank is adapted to engage, thereby obviating the necessity of the usual squaring lugs shown at 12. This reinforcement also has the effect of reducing the effective depth of the bolster opening 5 for the insertion of the bolster 13, thereby making it desirable to decrease the height of the front or outer guide lugs 14 to correspond with the depth between the bolster guiding portions 15 of the bolster guide columns 4 and the reinforcement 11. The rear or inner bolster guides 16 may be of normal depth if desired.

For providing an adequate spring supporting area, the upper web 7 or spring plank seat portion between the bolster guide columns is laterally extended beyond the webs 9 and 10, as indicated at 17 and 18. These extensions are preferably braced with respect to the webs 9 and 10 by triangular gusset portions 19. The webs of the box shaped portion of the tension member may likewise be braced interiorly by webs 20, as shown most clearly in Figures 1 and 4. In order to allow for drainage and facilitate core removal, the lower web 8 may slope slightly towards its longitudinal center line and the transverse webs 20 are desirably formed with drain holes 21 facilitating the removal of the core and the escape of water or the like, the web 8 beyond the drain holes 21 being apertured, as indicated at 22, for the same purpose.

Considering the tension member in detail, it will be seen that the main portion thereof is substantially horizontal between the bolster guide columns 4 on its upper surface and curved on its lower surface and particularly beneath the bolster guide columns. This portion of the tension member, therefore, decreases in depth toward the ends thereof. The spring plank seat portion or upper web 7 is extended diagonally upward from the side of the window opening 5 toward the ends of the frame, the lower web 8 curving beneath the bolster guide columns and extending diagonally upward and slightly converging with respect to the diagonal portion of the upper web 7.

The upper portion 11 of the tension member or that portion convoluted or branching from the main web 7 adjacent the center por-

tion thereof is preferably of less width than the main portion, as illustrated most clearly in Figure 2. The reinforcement and particularly the upper web thereof is preferably extended from adjacent the outer edge of the central spring unit 23 diagonally upward and outward toward the ends of the frame at a slightly smaller angle than the diagonal portions of the web 7 so that it is slightly convergent with respect to said web. The web 11 may be bifurcated with the ends gradually tapering and merging into the upright webs 24 on the diagonal end portions of the tension member 3, the points of mergence preferably corresponding approximately with the points of contraflexure or being substantially midway between the bottom of the respective bolster guide column and the adjacent journal box. The web 7 outwardly of the bolster guide columns 4 is extended diagonally upward below said guide columns, as indicated at 25, until the guide columns merge with the diagonal portions of the walls 9 and 10 when the web disappears, as shown most clearly in Figure 1. The web 8 is preferably extended to unite with the journal boxes 6 in a normal manner and the connection with said journal boxes is desirably reinforced by gussets 26.

In order to provide for positioning the bolster 13 and associated car body (not shown) at a relatively low elevation, the portions of the compression member on either side of the guide columns 4 are caused to slope outwardly and upwardly rather than outwardly and downwardly, as is usual, to unite with the tension member adjacent the ends thereof or adjacent the junctions with the journal boxes 6. This construction provides a relatively shallow bolster or window opening 5, and in order to permit the use of bolster springs 23 of standard height, the bolster 13, instead of being supported by or engaging said springs, in the associated frames at the bottom or lower web at each end thereof, is formed with downwardly opening pockets receiving said springs which engage the top web, or adjacent the top web of said bolster, whereby the part of the bolster above the springs is very small in vertical dimension. In the present embodiment, I have shown a spring plank 27 upwardly corrugated adjacent its ends, as indicated at 28, to fit the reinforcements 11 on the frame. Seated on said spring plank are spring plates 29, only one of which is shown, correspondingly formed to nest with the spring plank and preferably provided with spring positioning collars 30. I have shown a five unit nest of springs, but I do not wish to be limited to this showing, two pairs of units 23 being disposed on opposite sides of the reinforcements 11 with the central or intermediate unit 23 disposed therebetween.

In order to economize material, the outer-

most end springs 23 are received in pockets 31 formed in extensions 32 on the bolster 13, said extensions being formed by bifurcating the bolster at each end and discontinuing the portions thereof intermediate the extensions over the outermost springs at a point suitable to provide a pocket 33 at each end thereof for receiving the intermediate or central spring 23. The upper part of the pocket 33 is defined by the downwardly and outwardly sloping top wall or web 34 of the bolster supplemented by triangular or tapering ribbing 35, the lower edges or faces of which are normally horizontal to provide a horizontal seat for the associated spring unit 23. The seats of the pocket 33 are preferably defined by a curved web 36 connecting the upper wall 34 and the lower wall 37 of the bolster and a transverse web 38 disposed between the extensions 32 of the bolster and merging with relatively deep webs 39 extending longitudinally of the bolster, or transversely of the frame, between the outermost springs 23 and the inner spring unit 23 as continuations of the interior webs 40, whereby the extensions 32 and the upper web 41 of the bolster on said extensions are adequately reinforced for carrying the weight of the car body to the bolster springs. Drain holes 34' are desirably provided in the web or wall 34 where it joins the web 38. The outermost end springs 23 are therefore pocketed between the upper bolster web 41, the reinforcing webs 39 and curved connecting webs 42 extending between the webs 39 and the outer side walls 43. The inner end springs 23 are likewise pocketed on the web 41 between the reinforcing webs 39, the side webs 43 of the bolster and curved connecting webs 44 therebetween. In order to properly space the inner and outer end springs 23, bosses or ribs 45 are preferably formed depending from the upper web 41 of the bolster between the spring receiving pockets 31 and 46.

The upper web 34 of the bolster may be provided with a side bearing pocket 47 and the lower wall 37 may be extended downwardly and inwardly, sufficient clearance, however, being at all times provided between said web and the spring plank to permit the desired compression of the springs 23, while at the same time the spacing may be such that compression of the springs is limited by engagement between the bolster and spring plank, whereby overloading of said springs may be avoided. The central or intermediate portions of the bolster (not shown) may be of any normal or desired construction.

From the foregoing disclosure, it will be seen that I have provided an improved car truck in which provision is made for positioning the bolster and associated car body at a low elevation as is sometimes desired in flat cars, for example, the bolster being so

formed that it may accommodate the usual or standard bolster springs. The journal boxes are positioned relatively high with respect to the bolster or window opening by having the ends of the compression member slope outwardly and upwardly instead of outwardly and downwardly, thereby making it possible to employ wheels of normal size while still permitting the low arrangement of the bolster and car body.

Although a preferred embodiment of my invention has been disclosed, it will be understood that the same is merely illustrative and that modifications may be made within the spirit and scope of my invention as set forth in the appended claims.

Having now described my invention, I claim:

1. A side frame comprising a compression member, a tension member, and struts spacing intermediate portions of said members and leaving a window opening therebetween, those portions of the members at the window opening being substantially horizontal with the portions outwardly thereof sloping upwardly and away from the window opening to join adjacent the ends thereof, said frame being reinforced by embossments in the top of the tension member beneath the window opening, said embossments extending diagonally upward and outward across the lower corners of the window opening.

2. A side frame comprising a compression member, a tension member, struts interposed therebetween and spaced to leave a window opening, that portion of the tension member between the window opening being widened to form a spring plank seat portion, said tension member outwardly of said spring plank seat portion comprising inclined end portions, each of which involves upper and lower portions angularly disposed with respect to each other, the compression member above the inclined end portions of the tension member sloping upwardly and outwardly like said tension member, but at a lesser angle, to unite with said tension member adjacent the ends of the frame.

3. A side frame comprising a tension member formed as a central horizontal beam portion supported at each end by upwardly and outwardly extending end portions and adjacent its center by upwardly and outwardly extending portions angularly disposed with respect to the first mentioned portions, and a compression member formed as a central horizontal beam portion with the ends thereof bent upwardly and extending outwardly to unite with the ends of the tension member.

4. A side frame comprising a compression member, a tension member, bolster guide columns interposed therebetween and spaced to leave a window opening, the junctions between the bolster guide columns and tension

member being reinforced by auxiliary diagonal tension members which cut across the lower corners of the window opening and extend upwardly and outwardly toward the ends of the frame, the compression member over the window opening being spaced relatively close to the tension member and formed with portions beyond the window opening extending upwardly and outwardly to unite with said tension member.

5. In a railway truck, in combination, a side frame comprising a compression member, a tension member, bolster guide columns spacing intermediate portions of said members and leaving a window opening therebetween, that portion of the tension member beneath the window opening being formed with embossments extending from the upper surface thereof to the bolster guide columns, a spring plank supported on said tension member and formed with corrugations interlocking with the embossments to maintain the plank in proper relation with respect to the frame, a nest of springs supported on said plank and disposed on opposite sides of and between corrugations thereof, a bolster supported on said nest of springs and formed with pockets extending substantially the full depth of said bolster for receiving said springs, whereby said bolster is positioned relatively low, the compression member over the window opening being disposed relatively low and formed with ends extending upwardly and outwardly to unite with the ends of the tension member.

6. In a railway truck, in combination, a side frame comprising a compression member, a tension member, bolster guide columns spacing intermediate portions of said members and leaving a window opening therebetween, a spring plank supported on said tension member beneath the window opening, a nest of springs supported on said plank, the height of said window opening being relatively small and those portions of the compression member on opposite sides thereof extending upwardly and outwardly toward the ends of the frame, a bolster with an end received in said window opening and supported on said nest of springs, said bolster, on account of the small height of the window opening, having pockets extending substantially the full depth thereof into which the springs seat.

7. In a railway truck, in combination, a side frame comprising a compression member, a tension member, bolster guide columns spacing intermediate portions of said members and leaving a window opening therebetween, a nest of springs supported in said window opening by means of said tension member, a bolster supported on said nest of springs, said bolster being formed with pockets defined by a top web and webs depending therefrom to the level of the bottom web

thereof for receiving said springs to permit the low positioning of the bolster even when standard springs are used, the compression member of said frame over the window opening being disposed relatively low in accordance with the low positioning of the bolster and having its ends on either side of the guide columns sloping upwardly and outwardly to unite with the ends of the tension member.

8. In a railway truck, in combination, a pair of side frames, each having a compression member, a tension member and bolster guide columns spacing intermediate portions thereof and leaving a window opening therebetween, said window opening being of reduced height and the compression member having the end portions thereof beyond the bolster guide columns sloping upwardly and outwardly to unite with the tension member adjacent the ends of the frame, a bolster with its ends received in the window openings of said frames, nests of springs supported by means of the tension members of said frames and supporting the ends of said bolster, said bolster, in order to receive springs of standard size in the window openings of reduced height, being formed with pockets below a top web thereof and defined by depending webs extending to a lower web thereof.

9. In a railway truck, in combination, a pair of side frames, each comprising a compression member, a tension member, bolster guide columns spacing intermediate portions of said members and leaving a window opening therebetween, a spring plank with its ends supported on the tension members of said frames, a nest of springs supported on each end of said plank, a bolster with its ends supported on said nest of springs, the bottom of said bolster extending so close to the spring plank and intermediate portions thereof that engagement therebetween is effected before the springs are compressed solid.

10. In a railway truck, in combination, a side frame comprising a compression member, a tension member, bolster guide columns spacing intermediate portions of said members and leaving a window opening therebetween, a nest of springs received in said window opening and supported by means of said tension member, a bolster supported on said nest of springs and formed with spaced extensions overlying the end and outermost springs, said springs resting on an upper web of said extensions, said upper web being reinforced by webs extending between the outermost springs and an intermediate spring and extended inwardly beyond the nest of springs as interior reinforcing webs between the upper and lower walls of the bolster.

11. A bolster having top, bottom and side walls with the bottom wall cut away at the ends thereof to form pockets for receiving bolster springs in engagement with the top wall to permit the low positioning of the

bolster, the outer ends of said bolster being bifurcated with side portions extended beyond the axial portion to overlie the outermost bolster springs.

12. A bolster having top, bottom and side walls and formed with pockets at the ends thereof for receiving bolster springs, said pockets being defined by the top wall, side walls and longitudinal webs of a depth corresponding with that of the bolster and running longitudinally intermediate the side walls thereof.

13. A bolster comprising top, bottom and side walls and formed with spring pockets at the ends thereof, the top walls of said pockets being disposed approximately at the elevation of the top wall of the bolster, side walls formed as extensions of the sides of the bolster, and intermediate walls formed as extensions of reinforcing webs in the bolster, the ends of said side and intermediate walls being joined by curved walls adapted to fit around associated springs.

14. A bolster formed with top, bottom and side walls and provided with bolster spring receiving pockets at the ends thereof, said ends being bifurcated to provide separated extensions adapted to overlie and receive the outermost end springs of associated nests of springs, the outer ends of said extensions being curved to snugly receive said springs and obviate the necessity of other spring positioning means.

In testimony whereof I affix my signature.
GLENN F. COUCH.

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