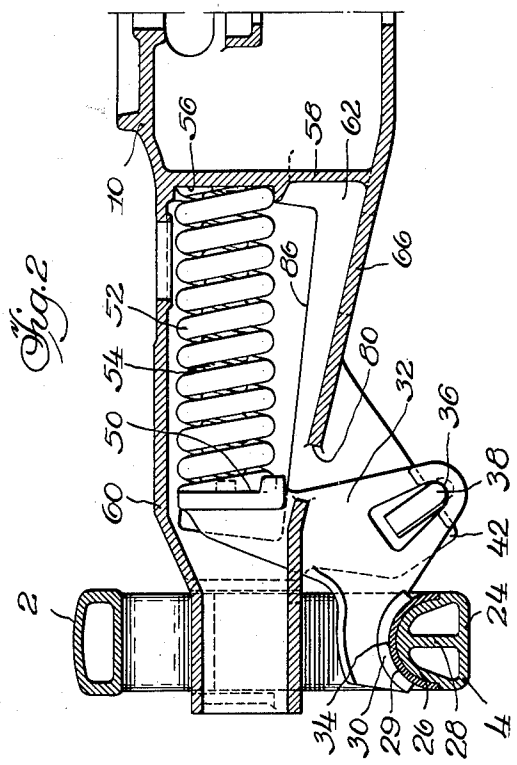
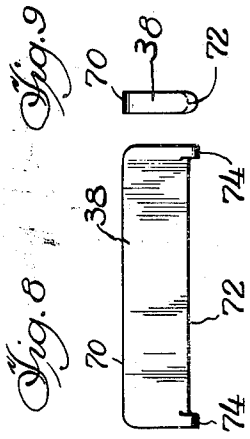
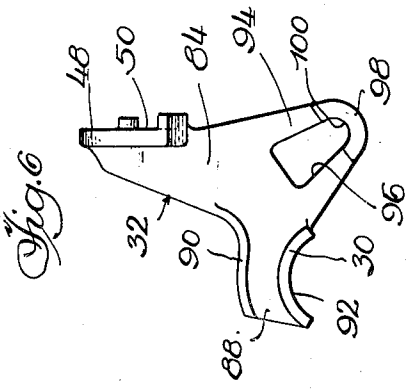
July 31, 1945. R. C. PIERCE 2,380,902

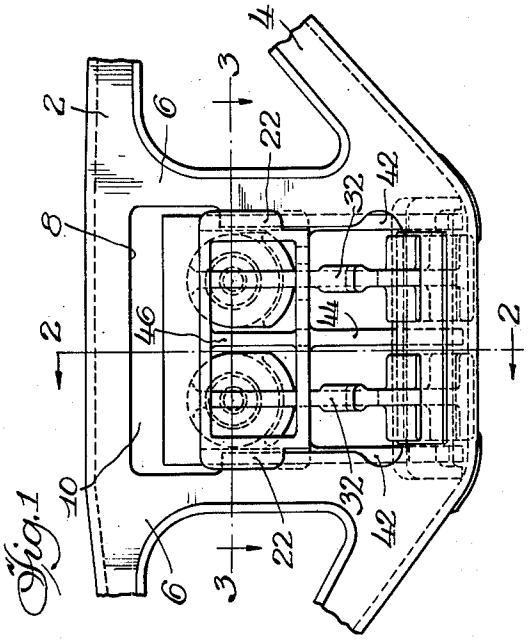
CAR TRUCK

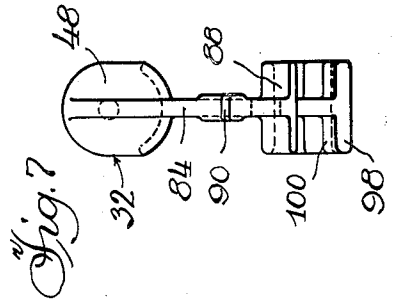
Filed May 15, 1943 2 Sheets-Sheet 1











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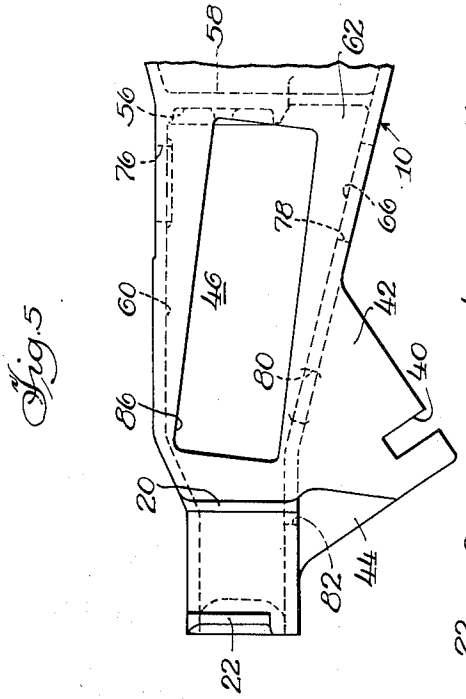

Fig. 5

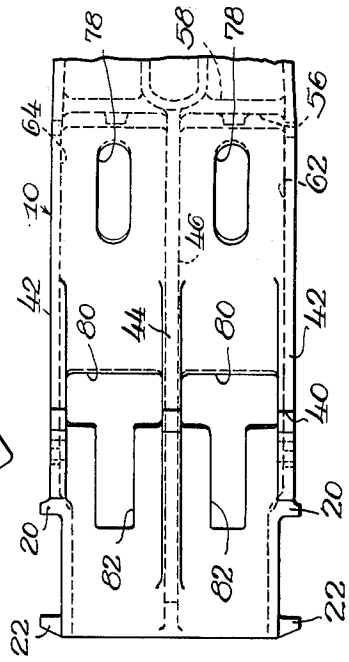

Fig. 4

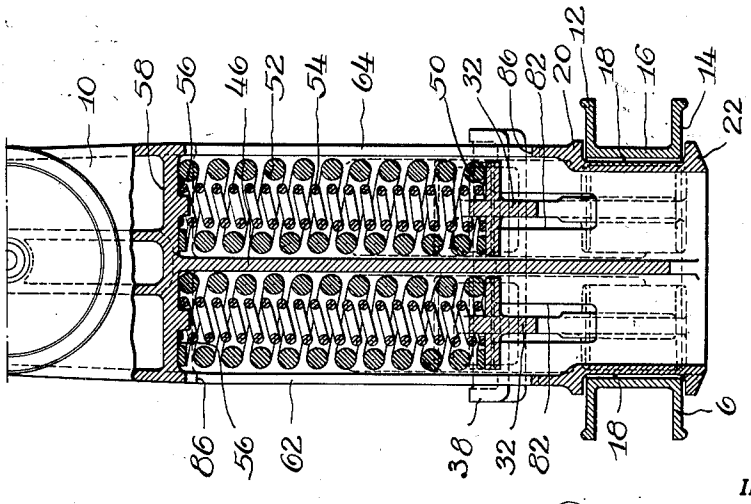

Fig. 3

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2,380,902

CAR TRUCK

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Application May 15, 1943, Serial No. 487,123

20 Claims. (Cl. 105—197)

My invention relates to a railway car truck and more particularly to a quick wheel change type utilizing a side frame and bolster of generally conventional form but affording a novel spring supporting arrangement therebetween.

The general object of my invention is to devise a railway car truck utilizing a truss side frame and a box section bolster with a novel spring supporting arrangement comprising a load lever or saddle casting having frictional engagement with the side frame, fulcrumed from the bolster and cooperating with resilient means mounted in the bolster.

A more specific object of my invention is to devise a railway car truck of the type described wherein a plurality of coil springs may be mounted in the bolster in cooperation with saddle castings or levers hung from said bolster and frictionally supported on the side frame.

My invention comprehends a novel form of load lever or saddle casting with a spring seat at one end thereof, a friction face at the opposite end thereof, and an intermediate fulcrum for connection to a bolster member specially arranged for that purpose.

My invention also comprehends a novel form of side frame structure arranged for cooperation with the before-mentioned load lever or saddle casting on the tension member in the bolster opening and, accordingly, is without a spring seat in the ordinarily accepted sense of the word. Also, my novel truck utilizes a unique bolster end structure as may hereinafter be described in detail.

In the drawings, Figure 1 is a fragmentary side elevation of a railway car truck embodying my invention, end portions of the side frame tension and compression members being cut away as not pertinent to my invention.

Figure 2 is a sectional view through the railway car truck illustrated in Figure 1, the section being taken adjacent the vertical transverse plane bisecting the truck structure as indicated by the line 2—2 of Figure 1.

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

Figures 4 and 5 illustrate in detail my novel bolster end, Figure 4 being a bottom plan view thereof and Figure 5 a side elevation.

Figures 6 and 7 illustrate my novel form of load lever or saddle casting, Figure 6 being a side elevation thereof and Figure 7 an end view taken from the left as seen in Figure 6.

Figures 8 and 9 illustrate the fulcrum key, locking the bolster and saddle casting, Figure 8 being a side view thereof and Figure 9 an end view.

In the embodiment illustrated, my novel car truck comprises a truss side frame having the compression member 2, the tension member 4, and spaced columns 6, 6, defining the bolster opening 8 within which may be received the end of the bolster, generally designated 10. Each column 6 may be of U section with the inboard web 12, the outboard web 14, and the transverse web 16, along the central portion of which may be formed flat bolster guide surfaces with which the bolster side walls may cooperate as at 18, 18 (Figure 3), said bolster being formed with inboard and outboard gibs 20 and 22 for guiding engagement therewith. Beneath the bolster opening the tension member 4 is of novel form, having the bottom horizontal web 24, an arcuate web 26, and a vertical longitudinal reinforcing rib 28. The arcuate web 26 may have secured thereon a wear plate 29 for cooperative engagement with the friction wall 30 of the saddle casting, generally designated 32, said wall having a face complementary in form with the arcuate web 26 for frictional movement therealong.

In the embodiment illustrated, a plurality of saddle castings or load levers 32, 32 of identical form are provided, each in slidable frictional engagement with the tension member as at 34, and each being fulcrumed intermediate its ends as at 36 against the key 38 which may be mounted in the slots 40, 40 formed respectively in the triangular portions 42, 42 projected from the vertical side walls of the bolster and in the triangular portion 44 (Figure 5) projected from the intermediate wall or rib 46 of the bolster. The opposite end of each lever member 32 may be formed with the spring cap 48, affording a seat as at 50 for the adjacent spring group including the outer compression spring 52 and the inner compression spring 54, the opposite ends of which may seat as at 56 against the vertical transverse wall 58 of the bolster.

The bolster, of usual box section, may have the top wall 60, side walls 62 and 64 (Figure 4), as well as the longitudinal central rib 46 and the bottom wall 66. The rib 46 and the lateral walls 62 and 64 are projected in the triangular portions, 44, 42, 42, as already described, to form fulcrum seats for the key 38 (Figure 8), said key having a rectangular edge 70 fitted within the slots 40, 40, an arcuate edge 72 affording a fulcrum as at 36, as already described for the load

levers 32, 32. The key 38 may have retaining lugs 74, 74 at its opposite extremities.

The top bolster wall 60 may be cored away as at 76 (Figure 5) and the bottom wall at 78, 78 to reduce weight. The bottom wall 66 may be also cored away to form the openings at 80, 80 at opposite sides of the bolster, each of said openings being slotted as at 82 to accommodate the vertical web 84 of the adjacent load lever 32. Each of the side walls 62 and 64 may be cored away as at 86 to afford entrance for the spring group and accessibility thereto.

The saddle casting or load lever 32 is shown in detail in Figures 6 and 7 and, as already indicated, comprises the vertical triangular web 84 having the spring seat 48 at one end and the side frame engaging friction portion 88 at the opposite end reinforced by the top flange 90 and formed with the arcuate web 30 having a bottom friction face 92 for engagement with a complementary surface on the side frame at 34, as already described. Intermediate its ends the load lever is formed with a fulcrum portion 94 slotted as at 96 for the key 38, said slot 96 having a V shape to accommodate the movement of said key therein. The yoke 98 at the extremity of the fulcrum portion affords an arcuate seat at 100 against which the arcuate edge 72 of the key 38 may seat, as already mentioned.

The saddle casting 32 is designed to prevent undue downward motion of the bolster and prevent the truck springs 52 and 54 from going solid. The bolster also is adequately supported in case of failure of the saddle casting, the key, or the downwardly projecting triangular portions of the bolster. The spring seat portion 48 of each saddle casting is supported above the associated slot 82 in the bottom of the bolster and so prevents the saddle casting from dropping in case of key failure or loss.

To those skilled in the art the operation of my device will be readily apparent. As the load is increased on the bolster, it will tend to be depressed in relation to the side frame and this will compress the springs 52 and 54 while at the same time the load levers 32, 32 will fulcrum about the pivots at 36 afforded by the key 38 mounted in the bolster, and a sliding movement of the friction end portion of the load lever will develop friction at 34 where the web 30 is in complementary engagement with the friction surface afforded on the tension member of the side frame. As the load is released, the movement between the friction surfaces will be in the opposite direction, of course, as the springs expand and the load lever rotates in the opposite direction about the fulcrum at 36.

It is to be understood that I do not wish to be limited by the exact embodiment of the device shown which is 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 truss side frame having a tension member and spaced columns defining in part a bolster opening, a friction seat on said tension member in said opening, a bolster having an end projecting into said opening, spring means in said bolster, a fulcrum arm on said bolster, and a member pivoted on said arm and seated at one end against said spring means and having its opposite end in slidable engagement with said seat, said seat having an arcuate configuration in complementary engagement with the adjacent end of said pivoted member.

2. In a railway car truck, a side frame having a tension member and spaced columns defining in part a bolster opening, a bolster having an end in said opening cooperating with said columns, a horizontal coil spring housed in said bolster, and a rigid member fulcrumed intermediate its ends from said bolster and having an end seated against said springs and an end in frictional engagement with said frame, said frame engaging end having an arcuate friction surface engaging a complementary surface on said tension member, said rigid member being fulcrumed approximately vertically below its engagement with said spring.

3. In a railway car truck, a side frame having a tension member and spaced columns, a bolster in guiding engagement with said columns, fulcrum means suspended from said bolster, a horizontal coil spring housed in said bolster and seated against a transverse wall thereof, and a lever pivoted from said fulcrum means and having an end bearing against said spring and an end in frictional engagement with said tension member, said last-mentioned end having an arcuate form engaging a complementary surface on said tension member.

4. In a railway car truck, a truss side frame having tension and compression members and spaced columns defining a bolster opening, a friction seat on said tension member in said opening, a bolster end projecting into said opening, resilient means in said bolster, fulcrum arms on said bolster, and members fulcrumed from said arms and supported at corresponding ends by said resilient means and at their opposite ends on said seat, each of said fulcrumed members bearing against the adjacent arm and resilient means in approximately the same vertical plane.

5. In a railway car truck, a truss side frame having a tension member and spaced columns defining in part a bolster opening, a friction seat on said tension member in said opening, a bolster having an end projecting into said opening, horizontal spring means housed in said bolster, a fulcrum arm on said bolster, and a member pivoted on said arm and bearing at opposite ends against said spring means and said seat, said pivot point being at the lowermost part of said bolster and at least as low as said seat.

6. In a railway car truck, a side frame having a tension member and spaced columns defining in part a bolster opening, a bolster having an end in said opening cooperating with said columns, resilient means in said bolster, and a triangular rigid member fulcrumed adjacent one corner thereof from said bolster to pivot in a vertical plane, said rigid member having a seat at another corner bearing against said resilient means, and frictional means adjacent the third corner engaging said frame.

7. In a railway car truck, a side frame having a tension member and spaced columns, a bolster in guiding engagement with said columns, fulcrum means suspended from said bolster, a horizontal coil spring housed in said bolster and seated against a transverse wall thereof, and a lever pivoted from said fulcrum means and having a vertical seat bearing against said spring

and an end in frictional engagement with said tension member.

8. In a railway car truck, a truss side frame having tension and compression members and spaced columns defining a bolster opening, a friction seat on said tension member in said opening, a bolster end projecting into said opening, resilient means in said bolster, a fulcrum arm on said bolster, and a member fulcrumed from said arm and supported at one end by said resilient means and at the other end on said seat, said fulcrumed member bearing against said resilient means in approximately the vertical plane defined by the fulcrum point thereof.

9. In a railway car truck, a supporting member, a supported member having an end in guided engagement with said supporting member, and a lever fulcrumed from one of said members and having its respective ends resiliently supported in one of said members and frictionally engaging the other of said members, said frictional engagement being along an arcuate surface, said lever fulcruming about the lowermost point of said supported member.

10. A box section bolster having a transverse wall affording a spring seat adjacent the center bearing thereof, parallel intermediate and side walls, a top wall and a bottom wall, a plurality of fulcrum means projecting from said bottom wall, and slots intermediate said fulcrum means for accommodation of an associated lever.

11. In a railway car truck, a side frame having tension and compression members and bolster guides, a bolster having an end in cooperative engagement with said guides, a friction seat on said tension member, and a member resiliently fulcrumed from said bolster for cooperative engagement with said seat, the resilient support for said fulcrumed member being approximately vertically above its fulcrum point.

12. A box section bolster having a transverse wall affording center bearing support, and parallel intermediate and lateral walls, said lateral walls being cored away to accommodate resilient means therebetween, and seats on said transverse wall for said resilient means.

13. A box section bolster having a transverse wall affording center bearing support, and parallel intermediate and lateral walls and top and bottom walls, fulcrum means projecting from said bottom wall, and a slot in said bottom wall adjacent said fulcrum means for accommodation of an associated lever member.

14. A side frame and bolster connecting lever of triangular form, having a main web with a slot therein at one corner of said triangle affording a fulcrum, a spring seat at another corner, and a friction seat at the third corner thereof, at least one of said seats being arranged at right angles to said main web.

15. In a truck, spaced side frames, a bolster cooperating therewith, and lever means fulcrumed from said bolster and having their inner ends resiliently seated therein and having their outer ends frictionally seated on said frames, respectively, the fulcrum of each lever means being located approximately at the intersection of the vertical plane passing through the adjacent resilient seat and the horizontal plane passing through the adjacent frictional seat.

16. In a railway car truck, a truss side frame having tension and compression members and spaced columns defining a bolster opening, a friction seat on said tension member in said opening, a bolster end projecting into said opening, resilient means in said bolster, a fulcrum arm on said bolster, and a rigid member fulcrumed from said arm and supported at one end thereof by said means approximately over said fulcrum point and at its opposite end on said seat.

17. In a railway car truck, a side frame having a tension member and spaced columns defining in part a bolster opening, a bolster having an end in said opening cooperating with said columns, resilient means in said bolster, and a rigid member fulcrumed intermediate its ends from said bolster and having an end seated against said resilient means and an end in frictional engagement with said frame, one of said ends being approximately in the same vertical plane as said fulcrum point and the other of said ends being adjacent the horizontal plane of said fulcrum point.

18. A box section bolster having a transverse wall affording center bearing support and laterally spaced vertical walls, certain of said spaced walls being cored away to accommodate resilient means associated therewith, and seats on said transverse wall for said resilient means.

19. A side frame and bolster connecting lever of triangular form, having a main web with a slot therein at one corner of said triangle affording a fulcrum, a spring seat at another corner, and a friction seat at the third corner thereof, at least one of said seats being of arcuate form.

20. A side frame and bolster connecting lever of triangular form, having a main web with a slot therein at one corner of said triangle affording a fulcrum, a spring seat at another corner, and a friction seat at the third corner thereof, at least one of said seats being of arcuate form and both of said seats being arranged at right angles to said web.

RAYMOND C. PIERCE.