March 30, 1943. R. B. COTTRELL 2,315,047

TRUCK

Filed Jan. 15, 1941

Fig. 1

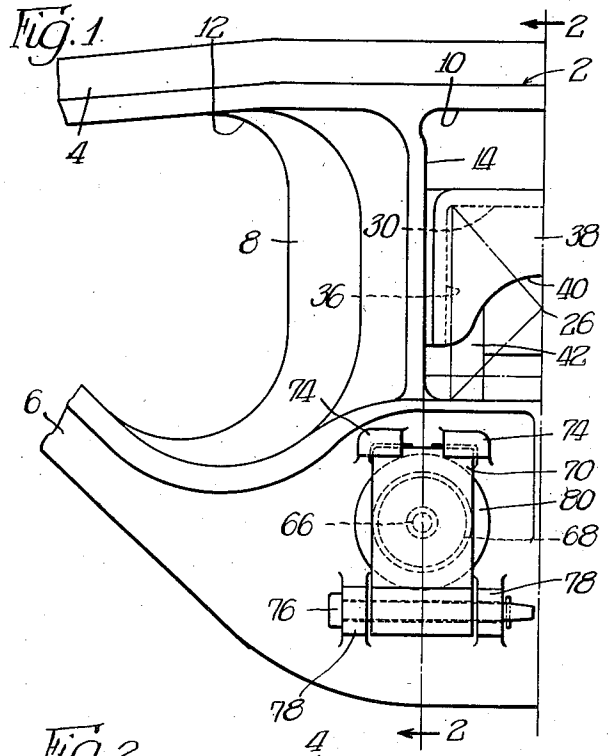


Fig. 3

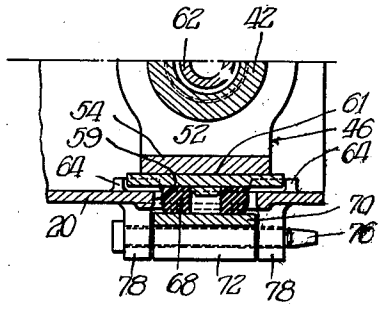


Fig. 2

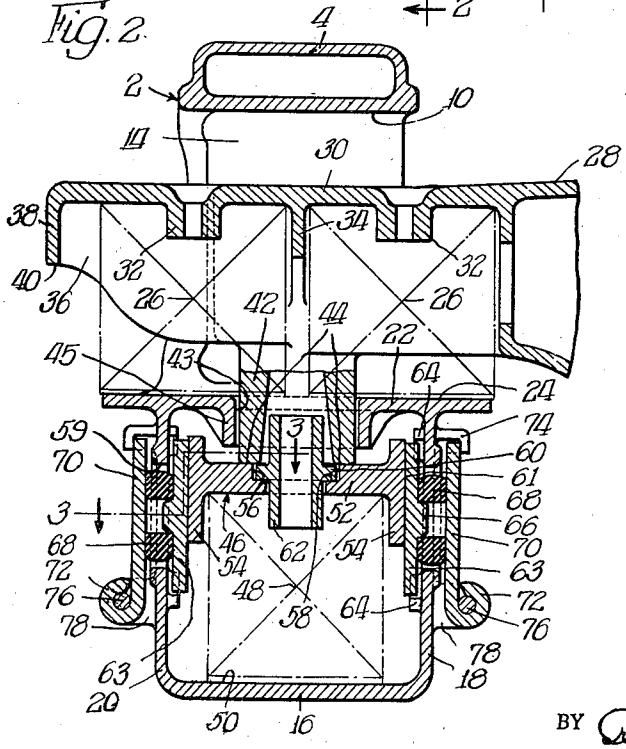
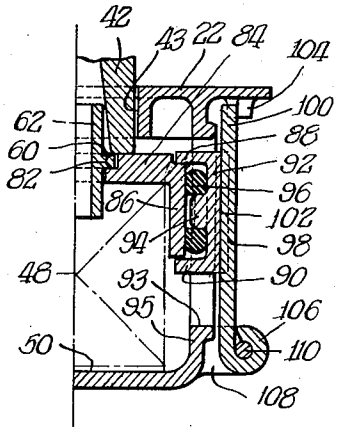


Fig. 4



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2,315,047

UNITED STATES PATENT OFFICE

2,315,047

TRUCK

Robert B. Cottrell, Chicago, Ill., assignor to American Steel Foundries, Chicago, Ill., a corporation of New Jersey

Application January 15, 1941, Serial No. 374,419

16 Claims. (Cl. 105—197)

My invention relates to a railway car truck and more particularly to a ride control arrangement for a well-known type of four wheel railway car truck. In a well known type of truck using a truss type side frame the bolster is supported from the frame through the medium of coils on two levels, certain of said coils being seated against the top wall of the bolster and supported on the top web of the tension member of the side frame and another of said coils being seated on the bottom web of the tension member below the bolster opening and actuated by means projecting from the bottom of the bolster.

An object of my invention is to devise a novel ride control means for the said truck which may be readily applied or removed without dismantling the truck parts and which may conveniently be modified or adjusted while the truck is in normal operating condition.

A specific object of my invention is to design a form of car truck such as that described wherein vertical movements of the bolster will actuate a damping mechanism which may be mounted in the tension member of the side frame at a point readily convenient for inspection or change of parts used in the control device. In the form of truck under contemplation the coil springs on the lower level are provided with spring caps which are actuated by means of the before mentioned projections or legs on the bottom of the bolster.

A specific object of my invention is to form said spring cap in such manner as to afford friction surfaces thereon and to devise a novel arrangement of friction plates on the side walls of the tension member for engagement with said friction surfaces. In my novel arrangement the side walls of the tension member of the side frame are formed with openings within which may be seated friction wear plates and a compression spring operable to urge said wear plates into engagement with the before mentioned spring cap friction surfaces.

In the drawing, Figure 1 is a fragmentary side elevation of a car truck such as that described embodying my invention.

Figure 2 is a sectional view through the truck arrangement shown in Figure 1, the section being taken in the transverse vertical planes indicated by the line 2—2 of Figure 1.

Figure 3 is a fragmentary sectional view through the snubbing arrangement and the tension member of the side frame, the section being taken in the horizontal planes indicated by the line 3—3 of Figure 2.

Figure 4 is a fragmentary sectional view comparable to the view shown in Figure 2 and illustrating a modified method of applying my novel control unit.

Describing the structure in detail, the side frame generally designated 2 is of well known form comprising the compression member 4 and the tension member 6 merging intermediate their ends with spaced columns 8, 8 which form therewith a central bolster opening 10 and a window opening 12 at each side thereof. Each column 8 is formed with a bolster guide surface 14 and the compression member above the bolster opening may be of box-section as shown in Figure 2. Likewise beneath the bolster opening the tension member 6 is of box-section comprising the bottom web 16, the inboard wall 18, the outboard wall 20, and the top web 22, said top web being widened to form the spring seat 24 on which may be positioned the upper level coil springs diagrammatically indicated at 26, 26. Into the bolster opening 10 may project the bolster 28, the top web or wall 30 whereof is formed with downwardly projecting spring positioning lugs 32, 32 and reinforced by the transverse rib or gusset 34. Each side wall 36 of the bolster acts as additional guide means for the enclosed springs 26, 26 and the end wall 38 of said bolster may be cut away as at 40 to afford inspection of said springs. At each side of the bolster is formed the downwardly directed projection or hollow leg 42 projecting through the opening 43 (Figure 2) formed in the spring seat web of the tension member and reinforced by the downwardly projecting annular flange 45. The annular face at the bottom of said leg 42 may bear as at 44, 44 on the spring cap 46 which is positioned upon the lower level coil springs diagrammatically indicated at 48, said springs being seated as at 50 on the bottom web 16 of the tension member.

A plan view of the spring cap 46 is shown in Figure 3. Said spring cap comprises a horizontal central portion or plate 52 with spaced inboard and outboard side walls 54, 54 and with the central opening 56 in the plate 52 shouldered as at 58 to afford a seat for the central annular flange 60 formed on the thimble 62, the opposite ends of which are symmetrical, the upper portion thereof projecting into the before-mentioned leg 42 on the bottom of the bolster, and the lower end thereof affording additional positioning means for the before-mentioned lower level coil springs 48. Each side wall 54 of the spring cap or plate 46 is formed with a flat

friction surface which may bear as at 61 on the friction plate or shoe 63 which may be positioned on the inboard surface of the adjacent side wall of the tension member over the opening 59 formed in said side wall. Said plate 63 may be positioned by means of lugs 64, 64 on said side wall adjacent the corners of said plate. On the outboard face of the friction shoe 63 may be formed a central lug 66 affording positioning means for the rubber pad or spring 68 which may be compressed between the shoe 63 and the opposed outer panel or plate 70. As shown, said panel 70 may be formed with an eye 72 at its lower end and in application the upper edge of said plate may be positioned within the slots defined by the spaced lugs 74, 74 (Figure 1), after which said plate may be forced into position and the securing pin 76 placed in position in the aligned openings of the spaced lugs 78, 78 and extending through the eye 72 of the plate 70. The arrangement of the control device or friction means on the inboard and outboard faces of the side frame is substantially identical as may be observed from the sectional view of Figure 2. Each opening 59 in the side wall of the tension member is beaded around its edges as may be noted at 80 in the side elevation of Figure 1.

In the modification shown in Figure 4 the bolster structure is the same and the leg 42 thereof is shown projecting through the opening 43 in the top web or spring seat 22 of the side frame tension member, said side frame structure being generally similar to that described for the previous modification and differing therefrom only in the detail relating to the form of the control unit or friction absorbing device. In this modification the thimble 62, associated with the leg 42 of the bolster, has the centrally formed annular flange 60 bearing as at 82 on the spring cap 84 which differs from the spring cap 46 of the previous modification only in that the side walls 86 project downwardly from the horizontal portion of said spring cap or plate and said side wall 86 may be confined between the top and bottom flanges 88 and 90 formed on the friction shoe 92 which is mounted in the opening 93 cored in the side wall 95 of the tension member. Said friction shoe 92 is formed with the central lug 74 serving as positioning means for the rubber pad or spring 96 under compression between the shoe 92 and the side wall 86 of the spring cap. Each friction shoe 92 may be formed at each side with a vertical flange 98 overlapping the adjacent edge of the friction panel 100 against which the outer face of said shoe may have frictional engagement as at 102. In assembly the friction panel 100 may have its upper edge positioned within the lugs 104, 104 formed on the web 22 of the tension member and fulcrumed therearound into position so that the eye 106 at the bottom edge thereof may be brought into alignment with lugs 108, 108 integrally formed on the outboard face of the adjacent tension member wall, after which a securing pin 110 may be projected through the aligned eye 106 and the spaced lugs 108, 108.

It will thus be seen that in both these modifications I have designed a novel control unit for association with this particular form of car truck which may readily be assembled or dismantled while the truck is in running condition. This device will afford a satisfactory degree of control for the oscillations of the springs in this type of truck.

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 truss side frame having a tension member, a compression member, and a central bolster opening, said tension member having a box-section beneath said opening with spaced webs forming top and bottom spring seats, springs on said seats, spring caps on said springs positioned on said lower seat, a bolster extending into said opening and seated on the springs on said upper seat with spaced legs projecting through said upper seat for engagement with said spring caps, each of said spring caps cooperating with friction means mounted in the inboard and outboard walls of said tension member, each of said friction means comprising a friction shoe mounted in the adjacent wall of said tension member, a friction panel supported on said last-mentioned wall in engagement therewith, and resilient means under compression between each shoe and the associated spring cap.

2. In a railway car truck, a truss side frame having a tension member, a compression member, and a central bolster opening, said tension member having a box-section beneath said opening with spaced webs forming top and bottom spring seats, springs on said seats, spring caps on said springs positioned on said lower seat, a bolster extending into said opening and seated on the springs on said upper seat with spaced legs projecting through said upper seat for engagement with said spring caps, each of said spring caps cooperating with friction means mounted in the inboard and outboard walls of said tension member, each of said friction means comprising a friction shoe interlocked with said spring cap for vertical movement therewith, resilient means between each shoe and cap, and a friction panel mounted on the adjacent tension member wall for engagement with each shoe.

3. In a railway car truck, a truss side frame having a tension member, a compression member, and a central bolster opening, said tension member having a box-section beneath said opening with spaced webs forming top and bottom spring seats, springs on said seats, spring caps on said springs positioned on said lower seat, and a bolster extending into said opening and seated on the springs on said upper seat with spaced legs projecting through said upper seat for engagement with said spring caps, each of said spring caps cooperating with friction means mounted in the inboard and outboard walls of said tension member, said friction means being applicable or removable through the walls of said tension member.

4. In a railway car truck, a truss side frame having tension and compression members and a central bolster opening, said tension member having a box-section beneath said opening with spaced webs forming top and bottom spring seats, springs positioned on said seats, a bolster extending into said opening and supported on said springs, spring caps associated with the springs on said lower seat, friction shoes interlocked with said caps at opposite sides thereof and extending through the side walls of said tension member, resilient means under compression between each spring cap and the supported friction shoes, and a friction panel mounted outwardly of each wall

of said tension member in engagement with said shoes respectively.

5. In a railway car truck, a truss side frame having tension and compression members and spaced columns defining therewith a bolster opening, said tension member having a box section beneath said opening with spaced webs forming top and bottom spring seats, springs on said seats, spring caps on said springs positioned on said lower seat, a bolter extending into said opening and positioned on said upper springs with projections extending through said upper seat for engagement with said caps, and friction means at opposite sides of each spring cap, each of said friction means comprising a panel mounted on the adjacent wall of said tension member, a friction shoe in engagement therewith, and resilient means between said shoe and the adjacent cap.

6. In a railway car truck, a truss side frame comprising tension and compression members and a central bolster opening, said tension member having a box-section beneath said bolster opening with top and bottom webs forming spaced spring seats, springs on said spring seats, a bolster extending into said opening and supported on said springs, spring caps mounted on certain of said springs, friction surfaces resiliently supported from each of said caps, and friction plates supported on opposite walls of said frame in engagement with said friction surfaces.

7. In a railway car truck, a side frame having tension and compression members and a central bolster opening, spring seats on spaced webs of said tension member, springs thereon, spring caps on certain of said springs, a bolster projecting into said bolster opening with means engaging said spring caps, each of said spring caps having cooperative engagement with friction means at opposite sides thereof, each of said friction means comprising a friction panel mounted on the adjacent wall of said tension member, and a friction shoe resiliently supported from the associated cap for engagement with said panel.

8. In a railway car truck, a side frame having tension and compression members and a central bolster opening, spring seats on spaced webs of said tension member, springs thereon, spring caps on certain of said springs, a bolster projecting into said bolster opening with means engaging said spring caps, each of said spring caps having cooperative engagement with friction means at opposite sides thereof, each of said friction means comprising a friction shoe operable by the associated spring cap, resilient means housed within said shoe, and a panel mounted on the adjacent tension member in frictional engagement with said shoe.

9. In a railway car truck, a side frame having tension and compression members and a central bolster opening, spring seats on spaced webs of said tension member, springs thereon, spring caps on certain of said springs, a bolster projecting into said bolster opening with means engaging said spring caps, each of said spring caps having cooperative engagement with friction means at opposite sides of each cap, each of said friction means comprising a panel mounted on a wall of said tension member, a friction shoe in engagement therewith, and resilient means between said shoe and the adjacent cap, each of said friction shoes being operable by the adjacent spring cap and having guiding engagement with the adjacent panel.

10. In a railway car truck, a side frame having tension and compression elements and spaced columns defining a bolster opening, spring seats on the upper and lower webs of said tension element, springs thereon, spring cap members on said lower springs, and a bolster projecting into said bolster opening and supported on all of said springs, said bolster having means projecting through said upper web for engagement with said spring cap members, each of said spring cap members cooperating with friction means at opposite sides thereof, each of said friction means comprising a panel member supported from an adjacent wall of said tension element, a friction shoe and resilient means under compression between said last-mentioned member and the adjacent spring cap member, said shoe having frictional engagement with one of said members.

11. In a railway car truck, a side frame having tension and compression elements and spaced columns defining a bolster opening, spring seats on the upper and lower webs of said tension element, springs thereon, spring cap members on said lower springs, and a bolster projecting into said bolster opening and supported on all of said springs, said bolster having means projecting through said upper web for engagement with said spring cap members, each of said spring cap members cooperating with friction means at opposite sides thereof, each of said friction means comprising a panel member removably mounted outwardly of the adjacent wall of said tension element, and a friction shoe and resilient means under compression between said panel member and the adjacent spring cap member with said friction shoe having frictional engagement with one of said members.

12. In a railway car truck, a truss side frame comprising tension and compression members and a central bolster opening, said tension member having a box-section beneath said bolster opening with top and bottom webs forming spaced spring seats, springs on said spring seats, a bolster extending into said opening and supported on said springs, and spring cap elements on certain of said springs, panel elements mounted on spaced walls of said tension member at opposite sides of each spring cap element, and friction shoes resiliently supported near each wall by the adjacent elements and in frictional engagement with one of said elements.

13. In a railway car truck, a truss side frame having tension and compression members and spaced columns defining therewith a bolster opening, said tension member having a box-section beneath said opening with spaced webs forming top and bottom spring seats, springs on said seats, spring caps on said springs positioned on said bottom seat, a bolster extending into said opening and positioned on said top springs with projections extending through said top seat for engagement with said caps, and friction means at opposite sides of each spring cap, each of said friction means comprising a panel mounted on the adjacent wall of said tension member, a friction shoe in engagement therewith, and resilient means between said shoe and the adjacent cap, said spring cap having cooperative engagement with said shoes for actuation thereof.

14. In a railway car truck, a side frame having tension and compression elements and spaced columns defining a bolster opening, spring seats on the upper and lower webs of said tension element, upper and lower springs thereon, spring cap members on said lower springs and a bolster projecting into said bolster opening and supported on all of said springs, said bolster having means

projecting through said upper web for engagement with said spring cap members, each of said spring cap members cooperating with friction means at opposite sides thereof, each of said friction means comprising a panel member supported from an adjacent wall of said tension element, a friction shoe and resilient means under compression between said last-mentioned member and the adjacent spring cap member, said shoe having frictional engagement with one of said members and guiding engagement with both of said members.

15. In a railway car truck, a side frame having tension and compression elements and spaced columns defining a bolster opening, spring seats on the upper and lower webs of said tension element, upper and lower springs on said seats, spring cap members on said lower springs, a bolster projecting into said bolster opening and supported on all of said springs, said bolster having means projecting through said upper web for engagement with said spring cap members, openings in the walls of said tension element at opposite sides of each spring cap member, a panel member removably mounted outwardly of each opening, a friction shoe and resilient means under compression between each panel member and the adjacent spring cap member, said friction shoe having frictional engagement with one of said members.

16. In a railway car truck, a side frame having tension and compression elements and spaced columns defining a bolster opening, spring seats on the upper and lower webs of said tension element, upper and lower springs on said seats, spring cap members on said lower springs, a bolster projecting into said bolster opening and supported on all of said springs, said bolster having means projecting through said upper web for engagement with said spring cap members, openings in the walls of said tension element at opposite sides of each spring cap member, panel members removably mounted outwardly of said openings, and a friction shoe and resilient means under compression between each panel member and the adjacent spring cap member, said friction shoe having frictional engagement with one of said members and having guiding engagement with both of said members.

ROBERT B. COTTRELL.