

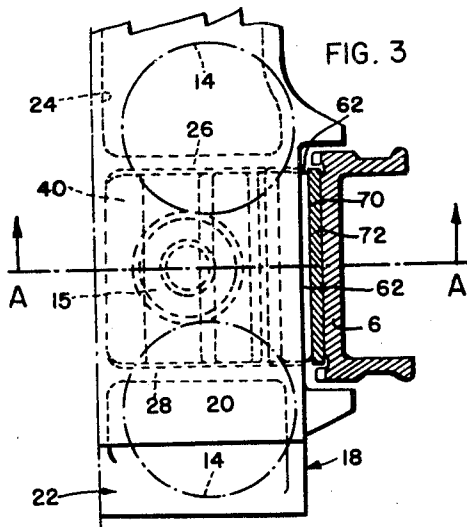
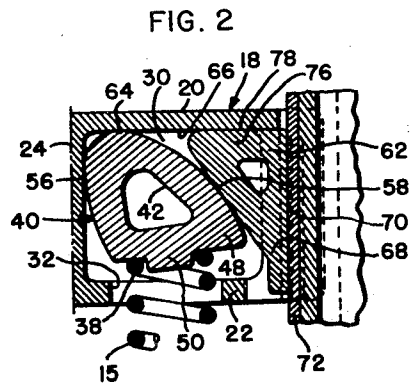
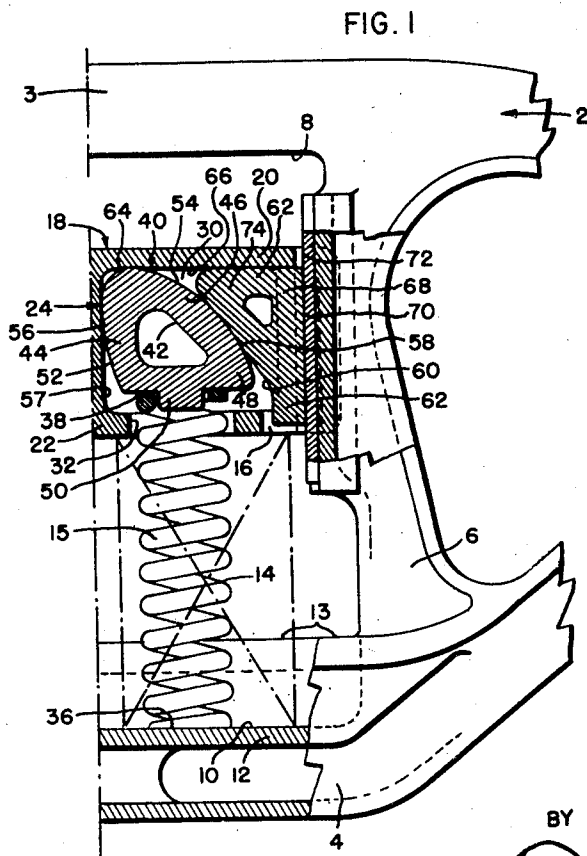
Dec. 21, 1948.

C. L. HEATER

2,456,635

TRUCK

Original Filed Aug. 17, 1945



INVENTOR
CHARLES L. HEATER

BY

John O. Garner

ATTORNEY

UNITED STATES PATENT OFFICE

2,456,635

TRUCK

Charles L. Heater, Flossmoor, Ill., assignor to
American Steel Foundries, Chicago, Ill., a cor-
poration of New Jersey

Original application August 17, 1945, Serial No.
611,008. Divided and this application January
23, 1947, Serial No. 723,858

17 Claims. (Cl. 105—197)

1

The invention relates to railway car trucks, and more particularly to a truck incorporating a snubbing device by means of which frictional control is afforded of the oscillations of the bolster-supporting spring group.

This application is a divisional of a copending application titled Truck, Serial No. 611,008, filed in the United States Patent Office on August 17, 1945, in the names of Walter L. Schlegel, Jr., and Charles L. Heater, and, since the filing thereof, changed to a sole application in the name of Walter L. Schlegel, Jr.

An object of the invention is to design a truck incorporating a snubbing device which operates to develop a greater degree of friction in one direction of movement to the bolster than in the opposite direction of movement for preventing synchronous oscillations of the bolster-supporting spring group.

In this invention a wedge and shoe are pocketed in each side of the bolster, the wedge being supported by a spring compressed between the same and the side frame and having arcuate faces merging at one side of the axis of the spring and respectively engaging angularly arranged walls of the pocket with one of the surfaces engaging a diagonal surface on the associated shoe at the opposite side of the axis of the spring, the respective points of engagement of the wedge with the walls of the pocket affording fulcrum points, whereby the wedge, under the influence of the associated spring, exerts a constant leverage against the surface of the associated shoe for urging the same outwardly of the pocket and into frictional engagement with the side frame column, an arrangement insuring the friction shoes being maintained in constant frictional engagement with the side frame columns and also permitting the shoes to be worn to a considerable extent in service without impairment of the degree of frictional engagement of the shoes with the side frame columns.

In this invention I contemplate the use of a novel wedge serving as a lever for actuating an associated friction shoe, the wedge comprising spaced lateral walls having arcuate surfaces converging toward the upper extremity of the wedge and a wall connecting the lower extremities of said lateral walls and presenting a spring seat angularly related to said arcuate surfaces, said arcuate surfaces converging at a point at one side of the spring seat.

The foregoing and other objects and advantages of the invention will become apparent from the following specification and the accompanying drawing, wherein:

Figures 1 and 2 are fragmentary side elevations of a railway car truck with the bolster and associated friction means shown in section in approximately the vertical longitudinal plane bisecting

2

the side frame, as indicated by the line A—A of Figure 3; and

Figure 3 is a fragmentary top plan view of the structure shown in Figure 1, illustrated in section through the column thereof.

Describing my novel truck in detail, the side frame, generally designated 2, comprises the compression member 3, the tension member 4, and a column 6 merging therewith adjacent each end of the frame to define a bolster opening 8. Seated at 10 on the top chord 12 of the side frame tension member 4, and positioned between the inboard and outboard flanges 13, 13 thereof, is the bolster-supporting spring group. The spring group comprises the main springs diagrammatically indicated at 14, and an auxiliary spring 15 at each end of the group, said springs 14 affording a seat as at 16 for the bolster, generally designated 18, and said springs 15 affording a support for an associated wedge member. The bolster 18 comprises the top and bottom walls 20 and 22, the longitudinal center rib 24, and the spaced transverse inboard and outboard walls 26 and 28 defining with said top and bottom walls and center rib a pocket 30 at each side of the bolster. The bottom wall 22 of the bolster is cored away at each side thereof to provide an annular opening 32 in each pocket 30 receiving the adjacent coil spring 15, said spring being seated as at 36 on the top chord 12 of the tension member 4 between the adjacent bolster-supporting springs 14, as shown in Figures 1 and 3 and extending upwardly through the opening 32 into the pocket 30 and bearing at its upper end as at 38 against an associated wedge member within said pocket. A bearer, wedge, or fulcrum member, generally designated 40, is disposed in each pocket 30. The member 40 is cored away as at 42 and comprises substantially vertical and diagonal walls 44 and 46 merging at their upper ends, and a substantially horizontal bottom wall 48 connecting said walls 44 and 46 at their lower ends, said bottom wall 48 providing a spring seat for engagement as at 38 with the associated coil spring 15 and having a depending lug 50 received within the upper end of said spring for positioning the bearer member on the same. The walls 44 and 46 of the member 40 are provided with arcuate faces 52 and 54 respectively, said face 52 having engagement as at 56 with an adjacent plane surface 57 on the center rib 24, and said face 54 having engagement as at 58 with a plane diagonal surface 60 of the associated shoe 62 and as at 64 with the horizontally disposed plane surface 66 of the bolster top wall 20. The shoe 62 comprises a friction wall 68 providing a friction surface in complementary engagement as at 70 with the adjacent column-mounted wear plate 72, a diagonal wall 74 presenting the surface 60 in engagement with the wedge member 40, and a horizontal wall 76 having a plane surface in com-

3

plementary engagement as at 78 with the surface 66 on the bolster top wall 20. It may be noted that the faces 52 and 54 of the bearer member 40 present a continuous surface semi-elliptic with the faces 52 and 54 engaging the adjacent faces 57 and 66 of the bolster at one side of the axis of the associated spring 15, whereby said member may fulcrum in an upward direction about its respective points of engagement of the faces 52 and 54 thereof with the surfaces 57 and 66 of the bolster under the influence of the associated coil spring 15 to thereby exert a leverage on the associated shoe 62 to urge the same outwardly along the bolster top wall 20 into frictional engagement with the adjacent column wear plate 72. It will be apparent that the bearer member 40 thus serves not only as a wedge urging the shoe into engagement with the top bolster wall and side frame column, but also as a lever to urge the associated shoe constantly outward into frictional engagement with the adjacent side frame column, and that as the friction or wedge parts of the friction device in each pocket become worn in service, the efficiency of the friction device will remain unimpaired, thereby greatly extending the life of the same. In Figure 2 is clearly shown the condition where the friction wall 68 of the shoe has been worn away to a considerable extent, and it may be noted that the wedge member, under the influence of the spring 15, is fully operative to actuate the shoe into frictional engagement with the column with sufficient force to effectively control the vertical oscillations of the bolster.

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 side frame comprising spaced columns, a spring group on said frame, a bolster supported on certain springs of said group, a pocket in said bolster adjacent each column, a friction shoe and bearer member in each pocket, said members being supported on other springs of said group and each presenting arcuate faces on opposite sides thereof merging at one side of the axis of the associated spring, said faces respectively engaging angularly arranged walls of said pocket, and one of said faces additionally engaging a wedge surface on said shoe at the opposite side of the axis of the associated spring, each of said bearer members rotating about its respective points of engagement with said walls under the influence of the associated spring in a direction toward the adjacent column whereby the related shoe is caused to slide on its wedge surface against said one face of the associated member toward the adjacent column for frictional engagement therewith.

2. In a railway car truck, a side frame comprising a column, a relatively movable member spring-supported from said frame adjacent said column, a pocket in said member, a friction shoe and bearer member in said pocket, a coil spring extending within said pocket and compressed between said bearer member and said frame, said bearer member having spaced arcuate surfaces in engagement with angularly arranged walls of said pocket at one side of the axis of said spring, one of said surfaces sloping toward and facing said column and engaging the associated shoe at the opposite side of the axis of said spring, said

4

bearer member fulcruming about the points of engagement with said walls under the influence of said spring toward the column and exerting leverage against the associated shoe to urge the same outwardly of said pocket and into frictional engagement with said column.

3. In a railway car truck, a side frame comprising tension and compression members and spaced columns extending therebetween and defining therewith a bolster opening, a box-section bolster resiliently supported on said tension member within said opening, said bolster comprising spaced top and bottom substantially parallel walls, and friction means associated with at least one of said columns comprising a shoe frictionally engaged therewith and engaged with said top wall, a fulcrum member housed within said bolster between said walls in engagement with said shoe, and actuating means for urging said fulcrum member into engagement with said shoe comprising a spring seated on said tension member, extending through a complementary opening in said bottom wall, and engaged with the bottom of said fulcrum member.

4. In a railway car truck, a side frame comprising a column, a relatively movable member spring-supported from said frame adjacent said column, a pocket in said member, a friction shoe in said pocket, a bearer member in said pocket in wedge engagement with said shoe, and a coil spring extending into said pocket and compressed between said bearer member and said frame, said bearer member fulcruming against at least one wall of said pocket at a point at one side of the axis of said spring under the influence of said spring to exert leverage on said shoe whereby said shoe is caused to slidably ride on said member outwardly of said pocket and frictionally engage said column.

5. In a railway car truck, a side frame comprising a column, a relatively movable member spring-supported from said frame adjacent said column, a pocket in said member, and a friction shoe in said pocket, a lever element in said pocket in engagement with said shoe, and a spring extending within said pocket and compressed between said element and said frame, said element fulcruming against angularly arranged walls of said pocket at one side of the axis of said spring and operatively urged by said spring into engagement with said shoe at a point spaced below the point of fulcrum of said element to urge the same into frictional engagement with said column.

6. In a railway car truck, a side frame having spaced columns, a bolster end spring-supported from said frame between said columns, said bolster end housing friction shoes in frictional engagement with respective columns and with the top wall of said bolster, a vertical web in said bolster end centrally thereof, a bearer member in engagement with each shoe and fulcrumed against said web and bolster wall, and spring means reacting against each bearer member at a point intermediate the points of fulcrum of said member and engagement with the associated shoe for rotating said member in a direction toward the respective column for thereby urging said shoe into said engagement with said bolster wall and column.

7. In a railway car truck, a side frame having a column, a bolster resiliently supported from said frame and having a pocket in alignment with said column longitudinally of said frame, a bearing surface in said pocket spaced laterally of said column, a friction surface in said pocket between

5

said bearing surface and said column, a fulcrum member rockably seated against said surfaces, a friction element intermediate said member and column in engagement with the said member, said friction surface and column, and resilient means reacting against said member for rocking the same in a direction toward said column for urging said element against said friction surface and column.

8. In a fulcrum bearer for a friction absorbing device, a member having a spring seat, and a semi-elliptic surface comprising arcuate surfaces merging at a point diagonally disposed with respect to the plane of said spring seat.

9. In a railway car truck, a side frame having a column, a relatively movable member resiliently supported from said frame adjacent said column, a bearing surface on said member spaced laterally of said column, a friction surface on said member extending between said bearing surface and column, a fulcrum member in rockable engagement with both of said surfaces, a friction element in frictional engagement with said column, said friction surface and said fulcrum member, and spring means bearing against said fulcrum member for rocking the same against said element in a direction toward said column for urging said element against said column, said element and fulcrum member engaging each other along surfaces sloping toward the column.

10. In a railway car truck, a side frame having a column, a bolster resiliently supported on said frame adjacent the column, said bolster having a vertical wall and a horizontal wall, a fulcrum member in rockable engagement with both of said walls, a friction shoe in frictional engagement with one of said walls and said column, and resilient means bearing against said member and arranged to rock said member toward said column for engaging said member with said shoe and urging said shoe against said column.

11. In a railway car truck, a side frame having a column, a bolster spring-supported from said frame adjacent said column, angularly arranged converging surfaces on said bolster, a fulcrum member having curved converging surfaces each engaging a different bolster surface, a friction shoe in diagonal face engagement with one of said curved surfaces and in frictional engagement with the adjacent bolster surface and said column, and resilient means reacting against said fulcrum member at a point intermediate the points of engagement of said member with said shoe and said bolster surfaces for rotating said member toward said column for thereby urging said shoe against said column.

12. In a railway car truck, a load-carrying member having spaced columns, springs on said member intermediate said columns, a bolster seated on certain of said springs, said bolster housing friction shoes in engagement with respective columns, a vertical web in said bolster intermediate said shoes, and fulcrum members rockably seated against said web and the respective shoes and against an angularly arranged wall of said bolster, certain of said springs projecting through another wall of said bolster for abutment with said fulcrum members, said fulcrum members under the urging of said last-mentioned springs rotating in directions toward the respective columns and urging said shoes toward the same.

13. In a railway car truck, a side frame with a

6

friction surface, a bolster spring-supported from said frame adjacent said surface, a friction shoe in frictional engagement with said surface, a fulcrum member fulcrumed at a point remote from said surface against said bolster and bearing at a point adjacent said surface against said shoe on a side of said shoe opposite that engaging said surface, and resilient means arranged to rotate said member about said first-mentioned point in a direction bringing the last-mentioned point closer to said surface and thereby urging said shoe toward said surface.

14. In a railway car truck, a side frame comprising a column, a relatively movable member spring-supported from said frame adjacent said column, a fulcrum member fulcrumed against said movable member and rotatable in a plane extending longitudinally of said frame toward said column, a friction shoe wedged between said fulcrum member and said column, and means for rotating said fulcrum member in said plane toward said column.

15. In a railway car truck, a side frame having a friction surface, a bolster resiliently carried from said frame, a friction element in engagement with said surface, a fulcrum member bearing at spaced points against said bolster and said element, spring means bearing against said member intermediate said points, the point of engagement of said member with said element being disposed below the point of engagement between said member and bolster.

16. In a railway car truck, a side frame having a friction surface, a bolster spring-supported from said frame, a wall on said bolster spaced laterally from said surface, friction means carried by the bolster between said wall and surface including a friction element in engagement with said surface and a fulcrum element bearing against said wall, and resilient means reacting against said element for rotating the same away from said wall against said shoe for urging the latter against said surface.

17. In a railway car truck, a pair of relatively movable members, one of said members having a friction surface and the other of said members having a pocket, friction means in said pocket including a friction shoe in frictional engagement with said surface and a fulcrum element fulcrumed in said pocket at a point remote from said surface and bearing against said shoe at a point adjacent said surface, and resilient actuating means reacting against said element intermediate said points for rotating said element toward said surface for urging said shoe against said surface, said first-mentioned point being disposed above said second-mentioned point.

CHARLES L. HEATER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
992,442	O'Connor	May 16, 1911
1,444,553	O'Connor	Feb. 6, 1923
1,602,353	Forsyth	Oct. 5, 1926
2,129,408	Davidson	Sept. 6, 1938
2,176,909	Lazna	Oct. 24, 1939
2,425,822	Olander	Aug. 19, 1947