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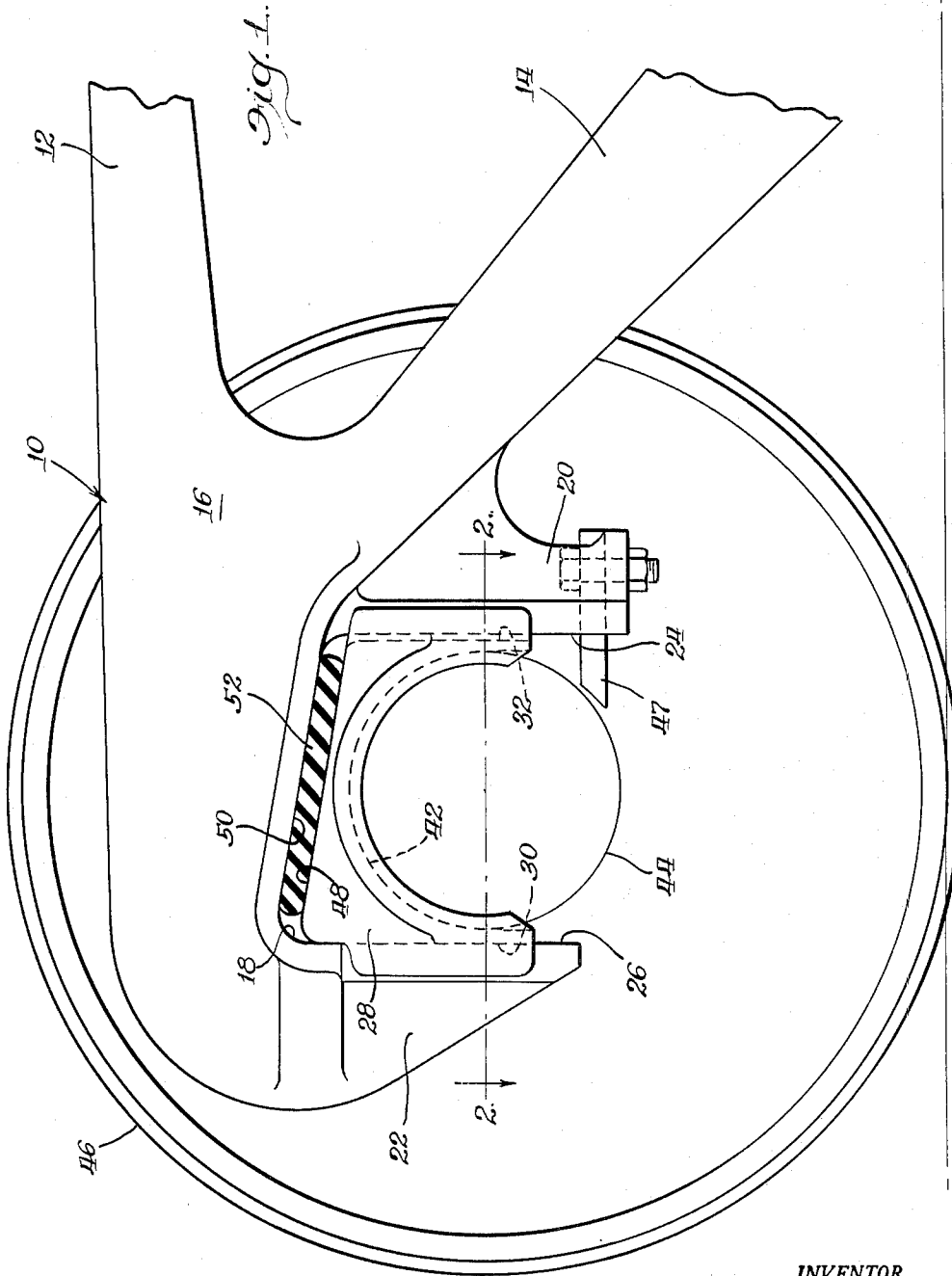
A. F. BAKER

3,211,112

LATERAL SNUBBING DEVICE

Filed Nov. 9, 1961

2 Sheets-Sheet 1



Witness:

Low H. Conaway

INVENTOR.

Arthur F. Baker

BY

Walter J. Schlegel, Jr.

Att'y.

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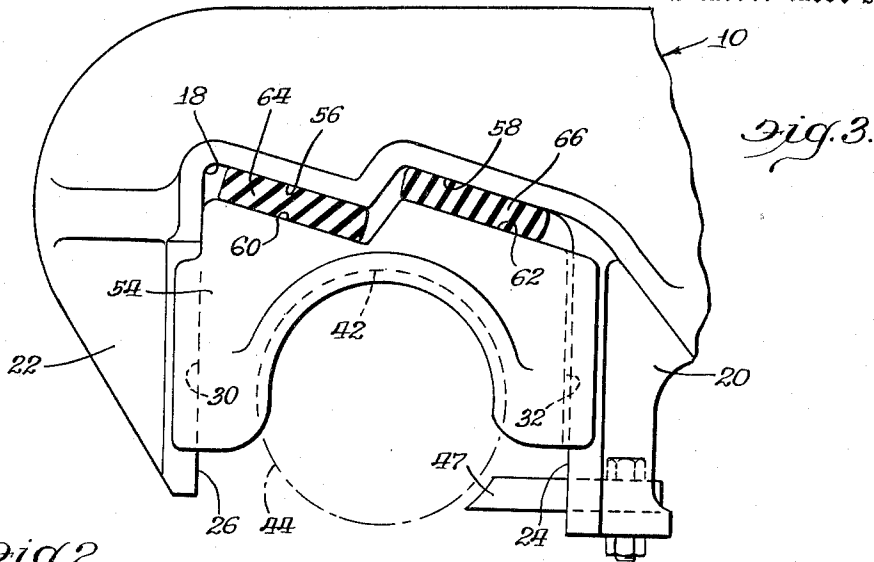
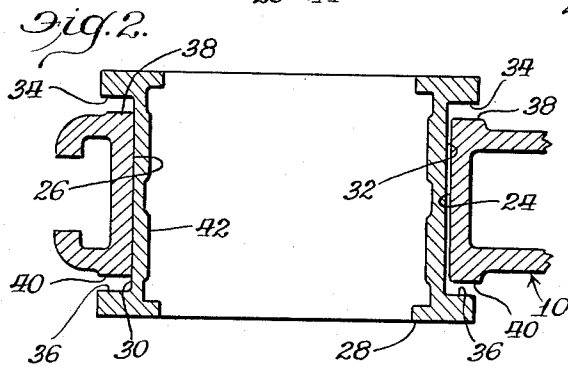
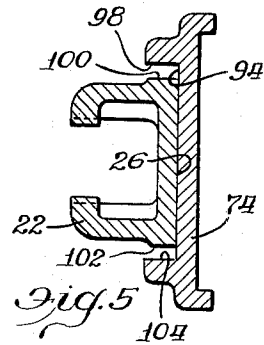
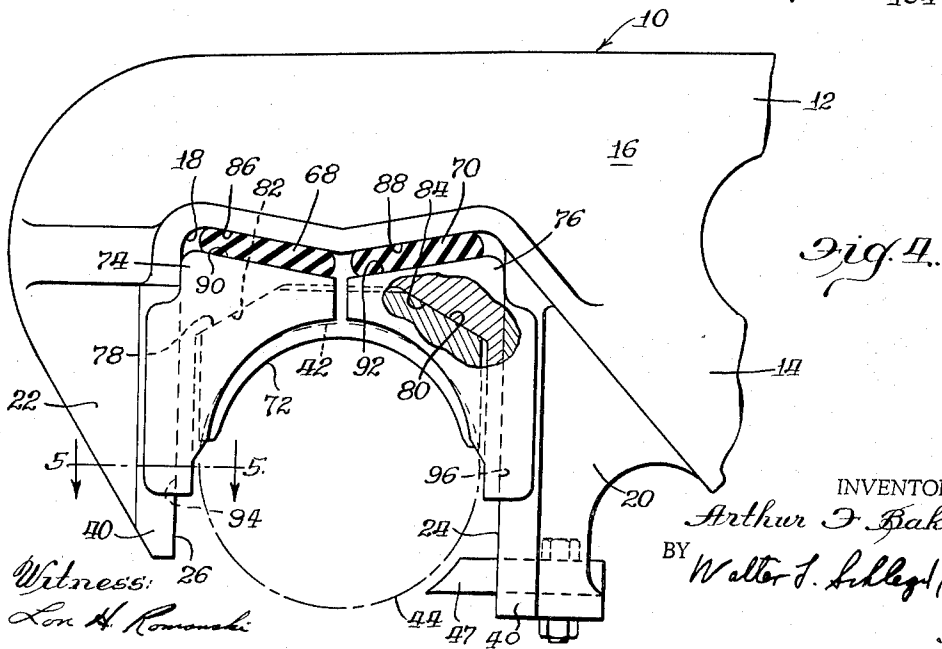
A. F. BAKER

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LATERAL SNUBBING DEVICE

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2 Sheets-Sheet 2



Witness: 26
Lon A. Romanowski

INVENTOR.
Arthur F. Baker
BY Walter J. Lileg, Jr.
Atty.

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LATERAL SNUBBING DEVICE

Arthur F. Baker, Granite City, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill., a corporation of New Jersey

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8 Claims. (Cl. 105-224.1)

This invention relates generally to railway car trucks and more particularly to a method of connecting the journal end of a wheel and axle assembly to the pedestal ends of an associated side frame.

The usual friction type of freight car truck allows considerable relative movement between the wheel and axle assembly and the supporting side frame members due to both the tolerances permitted and to the form of the connection between the journal end of the wheel and axle assembly and the integral jaws of the side frame structure. Such relative movement is in itself desirable in that it allows the car truck to compensate for variations as, for example, occur in the road bed and/or track spacing. However, such relative movement must be to some degree retarded in order to prevent undesirable and sometimes damaging vibrations.

Accordingly, an object of this invention is to provide a structure wherein relative lateral movement between the wheel and axle assembly and associated side frame is permitted but also dampened.

A more specific object of this invention is to provide resilient means between the top of the journal end of the wheel and axle assembly and the associated side frame member in a manner so as to produce varying frictional forces for dampening the relative movement between said assembly and side frame.

Other objects and advantages will become apparent when reference is made to the following description and drawings wherein:

FIGURE 1 is a fragmentary side elevation of a railway car truck embodying the invention;

FIGURE 2 is a fragmentary cross-sectional view taken substantially on the plane of line 2-2 of FIGURE 1 and looking in the direction of the arrows;

FIGURES 3 and 4 are fragmentary side elevational views of a railway car truck embodying different modifications of the invention; and

FIGURE 5 is a fragmentary cross-sectional view taken on the plane of line 5-5 of FIGURE 4 and looking in the direction of the arrows.

Some details may be omitted from one or more figures for purposes of clarity.

Referring now in greater detail to the drawings, FIGURE 1 illustrates a fragment of a side frame 10 comprised of a compression member 12 and a tension member 14 which merge as at 16 and continue therebeyond over the journal opening 18 defined generally by downwardly projecting pedestal jaws 20 and 22.

Substantially flat guide surfaces 24 and 26, formed on pedestal jaws 20 and 22, respectively, so as to be parallel to each other and substantially vertical, are adapted to receive a bearing adapter 28 which has cooperating guide surfaces 30 and 32. The bearing adapter 28 also has formed thereon inboard and outboard flange portions 34 and 36, respectively, which cooperate with parallel inboard and outboard abutment surfaces 38 and 40, respectively, formed on the side frame in establishing an absolute limit on the relative lateral movement between the axle and wheel assembly and the side frame. An arcuate surface 42 formed generally within the adapter 28 receives the bearing 44 which is suitably connected to the wheel and axle assembly 46. A safety lug 47 may, of course, be provided in order to prevent the accidental

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disassembly of the wheel and axle assembly 46 from the side frame 10.

The tops of both the bearing adapter 28 and the journal opening 18 are formed to provide parallel but inclined surfaces 48 and 50 which contain and act against a resilient member 52 inserted therebetween. Preferably, although not necessarily, the resilient member 52 is made of rubber having a Shore "A" durometer hardness of approximately 45 to 55.

From the disclosure of FIGURE 1 it is apparent that the wheel and axle assembly 46 is allowed to move both laterally and vertically while undergoing a snubbing or dampening action in both directions. That is, as the wheel and axle assembly 46 is caused to move upwardly, the resilient member 52 undergoes compression. However, since surfaces 48 and 50 are inclined from the horizontal, a resulting or component force is created which urges the assembly 46 and adapter 28 against surface 26 of the pedestal portion 22 in what may be considered generally as a wedging action. Accordingly, it is evident that as member 52 is compressed the frictional force developed by the engagement of surfaces 26 and 30 tends to dampen further and subsequent relative movements.

An added advantage is obtained by having the resilient member 52 inclined from the horizontal, in the manner disclosed, while maintaining guide surfaces 24 and 26 in a vertical direction. That is, as the inclined resilient member 52 is compressed, adapter 28 is caused to tend to move toward surface 26 to a greater degree, with increasing degrees of compression of member 52, thereby resulting in a variable dampening frictional force. Consequently, greater dampening forces are created only at the moment that they are needed. Lateral snubbing is, of course, effectively accomplished through the frictional forces developed between coating surfaces 26 and 30 as well as those developed between resilient member 52 and containing surfaces 48 and 50.

FIGURE 3 illustrates a modification of the invention as disclosed by FIGURES 1 and 2 wherein all elements which are like or similar to those of either FIGURES 1 or 2 are identified with like reference numbers.

The tops of both the bearing adapter 54 and journal opening 18 are each formed to provide a plurality of discrete parallel surfaces 56, 58, 60 and 62 which are inclined from the horizontal. Separate resilient members 64 and 66 are adapted to be inserted between surfaces 56 and 60 and surfaces 58 and 62, respectively.

By employing the modification as disclosed by FIGURE 3, it is possible to increase the angle of inclination of the resilient members, over that disclosed by FIGURE 1, without having to in any way weaken either the side frame 10 or the bearing adapter 54. All of the attendant features of the invention as disclosed by FIGURE 1 are, of course, present in the modification with the added benefit of making it possible to still further increase the frictional dampening force because of the greater angle of inclination of the resilient members with the resulting greater wedging action.

FIGURE 4 illustrates another embodiment of the invention wherein multiple resilient inserts or pads 68 and 70 are retained between, generally, the journal end of the wheel and axle assembly and the top of the journal opening 18. All elements similar to those of either FIGURES 1, 2 or 3 are identified with like reference numbers.

A bearing adapter 72, which receives the bearing 44 of the wheel and axle assembly, is received within cam-like friction members 74 and 76 and has formed thereon, at the upper portion thereof, oppositely disposed cam surfaces 78 and 80 adapted to abut against and coast with cam surfaces 82 and 84 formed internally of the friction members 74 and 76, respectively.

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The top of the journal opening 18 is formed to provide surfaces 86 and 88 which are oppositely inclined from the horizontal, preferably, by the same number of degrees, while the tops of friction members 74 and 76 are formed to provide surfaces 90 and 92 which are parallel to surfaces 86 and 88, respectively.

As the resilient pads 68 and 70 are compressed, a component force urges the friction members 74 and 76 outwardly by means of coacting cam surfaces 78, 82 and 80, 84 thereby forcing the friction surfaces 94 and 96 of members 74 and 76 against the guide surfaces 26 and 24. Accidental lateral disengagement of friction members 74 and 76 from the side frame 10 is, of course, prevented as by the provision of inboard and outboard abutment surfaces 98, 100 and 102, 104 as illustrated by FIGURE 5.

Although but three embodiments of the invention have been disclosed and described it is apparent that other modifications are possible within the scope of the appended claims.

I claim:

1. In a railway car truck, a side frame having tension and compression members converging toward each end of the frame to provide an end portion, spaced depending pedestals below the end portion presenting opposed guide surfaces aligned longitudinally of the frame, said guide surfaces being arranged parallel to each other so as to be substantially vertically disposed with respect to the transverse axis of said frame, one of said pedestals being connected to said tension member and the other of said pedestals being connected to the outer end of said end portion, a wheel and axle assembly including a bearing member interposed between said pedestals, friction means for receiving said bearing member and for directly engaging in frictional relationship said guide surfaces, first abutment means formed on said frame between said guide surfaces comprising first and second discrete downwardly facing abutment surfaces each diverging from said transverse axis in directions opposite to each other, second abutment means formed on said friction means comprising third and fourth discrete upwardly facing abutment surfaces, said third and first and fourth and second abutment surfaces being parallel to each other, respectively, and resilient means interposed between said discrete upwardly and downwardly facing abutment surfaces to accommodate movement of said friction means into frictional engagement with both of said guide surfaces.

2. In a snubbing device for a vehicle having a side frame supported on a wheel and axle assembly, pedestal portions formed on said side frame and oppositely disposed about the transverse axis of said wheel and axle assembly, vertically extending parallel and opposed guide surfaces formed on said pedestal portions, a journal adapter member partially receiving therein said assembly, friction members atop said adapter member and depending downwardly between said adapter member and said guide surfaces, and resilient means interposed between said frame and said friction members to accommodate movement of said friction members both downwardly and outwardly against said guide surfaces with an ever increasing force as said wheel and axle assembly moves upwardly relative to said frame.

3. In a snubbing device for a vehicle having a side frame supported on a wheel and axle assembly, pedestal portions formed on said side frame and oppositely disposed about the transverse axis of said wheel and axle assembly, vertically extending parallel and opposed guide surfaces formed on said pedestal portions, a journal adapter member partially receiving therein said assembly, friction members atop said adapter member and depending downwardly between said adapter member and said guide surfaces, oppositely inclined downwardly facing abutment surfaces formed on said frame between said pedestal portions, and resilient means interposed between said abutment surfaces and said friction members to accommodate movement of said friction members both

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downwardly and outwardly against said guide surfaces with an ever increasing force as said wheel and axle assembly moves upwardly relative to said frame.

4. In a snubbing device for a vehicle having a side frame supported on a wheel and axle assembly, pedestal portions formed on said side frame and oppositely disposed about the transverse axis of said wheel and axle assembly, vertically extending parallel and opposed guide surfaces formed on said pedestal portions, a journal adapter member located between said guide surfaces partially receiving therein said assembly, friction members atop said adapter member and depending downwardly between said adapter member and said guide surfaces, a plurality of oppositely inclined downwardly facing abutment surfaces formed on said frame between said pedestal portions, and a plurality of resilient means interposed between said abutment surfaces and said friction members to accommodate movement of said friction members both downwardly and outwardly against said guide surfaces with an ever increasing force as said wheel and axle assembly moves upwardly relative to said frame.

5. In a railway car truck, a side frame having tension and compression members converging toward each end of the frame to provide an end portion, spaced downwardly depending pedestals below the end portion, a guide surface formed on each of said pedestals, said guide surfaces being arranged opposed but parallel to each other and aligned longitudinally of the frame but substantially vertically disposed with respect to the transverse axis of said frame, first vertically extending inboard and outboard abutment surfaces formed on each of said pedestals, a wheel and axle assembly including a bearing member interposed between said pedestals, a bearing adapter member for receiving said bearing member, first cam-like surfaces formed atop said adapter member and generally oppositely disposed about the longitudinal axis of said wheel and axle assembly, first and second friction members each having a cavity formed therein for the reception of said adapter member, each of said cavities including second cam-like surfaces adapted to abut against said first cam-like surfaces, second vertically extending inboard and outboard abutment surfaces formed on each of said first and second friction members adapted to cooperate with said first inboard and outboard abutment surfaces in establishing a maximum relative lateral movement between said friction members and said side frame, third and fourth discrete downwardly facing abutment surfaces formed on said frame between said guide surfaces, said third and fourth abutment surfaces each diverging from said transverse axis in directions opposite to each other, a fifth abutment surface parallel to said third abutment surface formed atop said first friction member, a sixth abutment surface parallel to said fourth abutment surface formed atop said second friction member, and resilient means interposed between said third and fifth and said fourth and sixth abutment surfaces, respectively, to accommodate movement of said first and second friction members in the direction of the planes determined by the respective abutting cam-like surfaces and into frictional engagement with both of said guide surfaces with a force generally proportional to the deflection incurred by the resilient means.

6. In a railway car truck, a side frame having tension and compression members converging toward the end of the frame to provide an end portion, spaced downwardly dependent pedestal jaws below the end portion, one of said jaws having a vertical friction face, a wheel and axle assembly having a bearing adapter between said jaws to frictionally engage said friction face, opposed abutment surfaces on said frame and said bearing adapter, said abutment surfaces being arranged in parallel inclined planes sloping downwardly at an acute angle from said friction face, and a resilient member engaged between said abutment surfaces to accommodate movement of said bearing adapter into frictional engagement with said fric-

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tion face responsive to downward movement of said side frame relative to said adapter.

7. A railway car truck according to claim 6 in which the other of said jaws has a guide surface parallel to said friction face.

8. A railway car truck according to claim 7 in which two sets of opposed abutment surfaces are provided on the side frame and bearing adapter, and resilient members are engaged between their respective abutment surfaces.

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5 MILTON BUCHLER, *Primary Examiner.*LEO QUACKENBUSH, EUGENE G. BOTZ,
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