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2,284,696

RAILWAY TRUCK STRUCTURE

Original Filed March 10, 1939

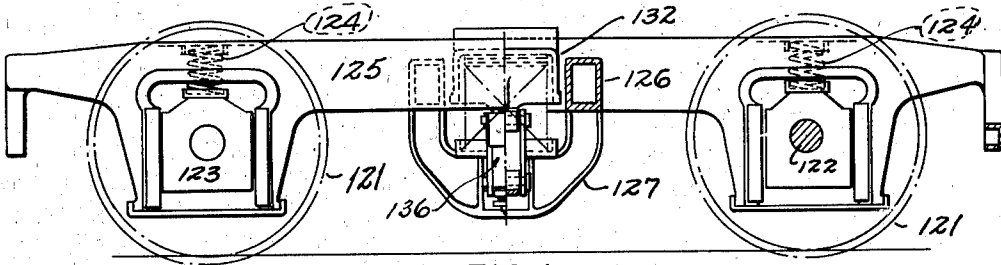


FIG. 1.

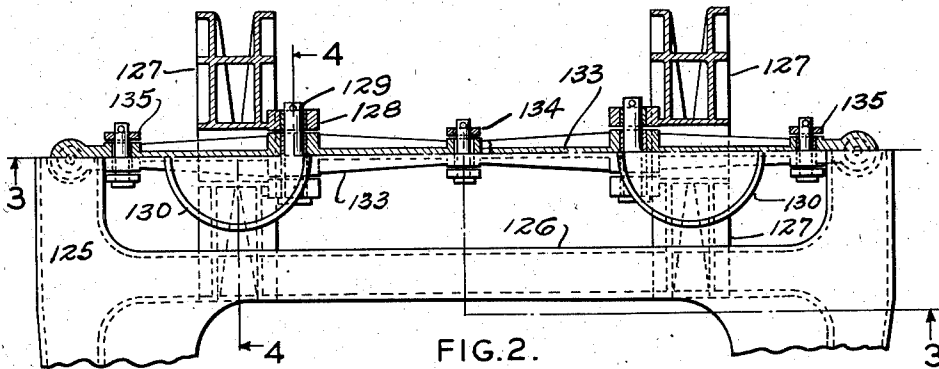


FIG. 2.

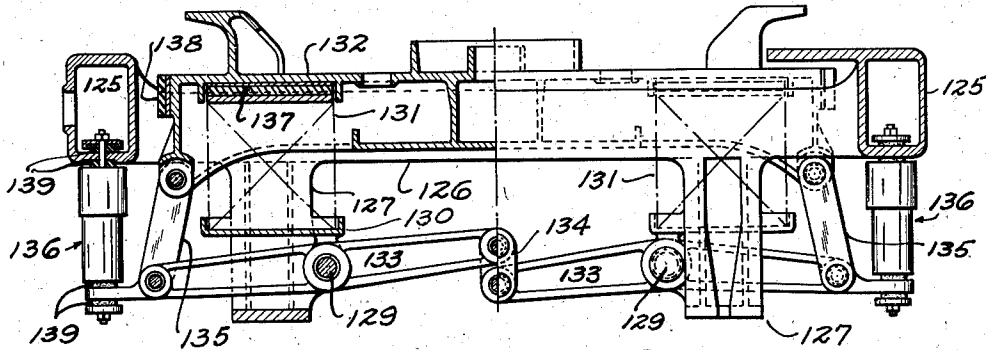


FIG. 3.

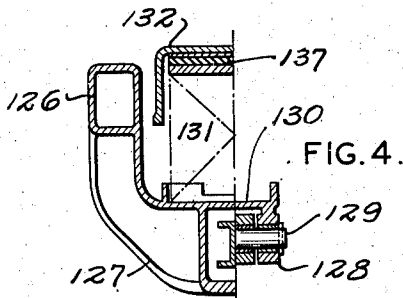


FIG. 4.

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RAILWAY TRUCK STRUCTURE

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Original application March 10, 1939, Serial No. 260,916. Divided and this application August 2, 1940, Serial No. 349,498

8 Claims. (Cl. 105-197)

The invention relates to railway rolling stock trucks particularly adapted for use in passenger train vehicles, the recent increased speeds of which, in conjunction with the recent use of lighter rolling stock, tend to produce rough riding characteristics.

The main object of the invention is to prevent rolling of the vehicle body from one side to the other because of centrifugal forces exerted on the vehicle body when the vehicle is rounding curved track or because of other forces tending to tilt the body transversely of the track.

This application is divided from an earlier application by the same inventors filed March 10, 1939, Serial No. 260,916 which has the same general objective but is directed more particularly to a truck structure in which the bolster, bolster springs and levers extending transversely of the truck for stabilizing the bolster spring action are carried on swing hangers.

A more specific object of the invention described herein is the mounting of the bolster spring stabilizing levers upon the truck frame but without necessarily restricting the bolster against transverse movement.

Another object is to combine with such an arrangement of truck frame and bolster spring stabilizing levers, shock absorbing mechanism whereby the vertical action of the bolster springs is dampened, preferably through the stabilizing levers.

This construction has the additional object of making possible the use of coil springs for supporting the bolster instead of the heavier, more expensive and cumbersome elliptic springs generally used.

Another object is to simplify and lighten a truck of the class described providing for the support of the bolster springs, stabilizing levers and shock absorbers without using a spring plank.

These and other detailed objects of the invention are attained in the structure illustrated in the accompanying drawing in which—

Figure 1 is a side elevation of a four-wheel car truck embodying the invention.

Figure 2 is in part a top view and in part a horizontal section illustrating the central portion of the truck with the bolster removed.

Figure 3 is a vertical transverse section and elevation taken on the line 3-3 of Figure 2.

Figure 4 is a vertical longitudinal section taken on the line 4-4 of Figure 2.

The truck includes wheels 121, axles 122, journal boxes 123, springs 124 carried by the journal boxes, and a truck frame including wheel pieces 125, mounted on springs 124, and transverse transoms 126 spaced apart longitudinally of the truck and connected at points spaced from wheel pieces 125 by depending yokes 127

provided with seats 130 for springs 131 which carry the truck bolster 132 of inverted U cross section at its end portions and box section at its intermediate portion.

The intermediate portion of each yoke 127 includes a bracket 128 forming bearings for a pin 129 upon which is pivoted a stabilizing lever 133 extending transversely of the truck with its inner end connected by links 134 to the inner end of a corresponding lever at the other side of the truck. The outer end portion of each lever 133 is pivotally connected by a link 135 to the outer end of the bolster and is also connected to the lower end of one member of a telescoping and shock absorbing device 136, the other end of which is connected to the truck frame wheel piece 125.

Preferably the shock absorbing device is of the hydraulic type in which the piston is valved to offer slight resistance to downward movement of the outer end of the stabilizing lever, and the bolster connected thereto, and to offer substantial resistance to a quick rebound of the lever and bolster. Hence the action of bolster springs 131 may be so controlled that they may yield readily to absorb relatively light shocks, yet will not produce discomfort by abrupt return to their normal position.

Any tendency of the bolster to tilt transversely of the truck, due to the presence of forces which normally would act unequally on the bolster springs, is prevented by the stabilizing levers 133. A force tending to raise or lower one end of the bolster, such as an overturning load, will be distributed through stabilizers 133 and links 135 to the end of the bolster on that side of the truck to which the force is applied and then through links 135 and stabilizers 133 to both bolster springs, irrespective of the point of application of the force, and through the stabilizer pivot pins 129 and the shock absorbers 136 to the truck frame and the frame supporting springs 124, all without any departure from the parallel relation of the bolster to the bolster spring seats.

There is a tendency to keep the bolster level except for such tilting as may result from inclination of the track or unequal compression of frame supporting springs 124 at opposite sides of the truck.

This construction results in a minimum amount of car body roll and provides greater stability than would be obtained with constructions having independent springs under the ends of the bolster which would permit a different amount of deflection of the bolster spring at one side of the truck from the deflection of the bolster spring at the other side of the truck.

However, there is a condition under which the bolster springs may compress unequally. The bolster may have some transverse movement be-

cause the resilient characteristics of its springs 131 permit the upper coils of the springs to have substantial horizontal movement relative to the spring seat. Such movement will be accompanied by pivotal movement of links 135, and the link at the side of the truck towards which the bolster moves assumes a more vertical position while the inclination from the vertical of the link at the opposite side of the truck increases. This tilts the bolster upwardly at the side of the truck towards which the bolster moves and downwardly at the other side of the truck, thus further resisting car body roll towards the side to which the bolster moves.

Rubber may be used to advantage to render the action of the parts more gentle. For example, rubber pads 137 are applied to the spring receiving portion of the bolster and pads 138 are applied to the portion of the bolster opposing the wheel piece to cushion shocks between these parts. Also, rubber elements 139 flexibly connect the ends of the shock absorbing and snubbing member 136 to truck frame wheel pieces 125 and the ends of levers 133.

It will be understood that rubber cushioning elements may be used elsewhere, if desired, to prevent metal to metal contact and thereby eliminate noise producing action and to absorb some shocks and to dampen the angling of various parts.

The detailed illustration and description herein are illustrative only and are not to be understood as limiting the invention, and the exclusive use of all modifications embodying the spirit of the invention and coming within the scope of the claims is contemplated.

What is claimed is:

1. In a railway truck, wheeled axles, a truck frame carried thereon and provided with fixed seats, springs on said seats, a bolster carried on said springs and movable thereon transversely of the frame, stabilizer structure having fixed pivots on said frame and extending from side to side of the truck, and links inclined from the vertical and pivotally connecting said structure and bolster, said links and stabilizer structure being constructed and arranged to counteract the overturning effect of lateral forces transmitted to the bolster from the vehicle body and thereby reduce to a minimum the amount of vehicle body roll in the direction of its lateral movement, there being a snubbing structure connecting the stabilizers and the truck frame.

2. In a railway truck, a truck frame including wheel pieces, spaced transoms connecting said wheel pieces, and yokes depending from and connecting said transoms at points spaced inwardly of the truck from said wheel pieces, springs carried on said yokes, a bolster supported on said springs, and stabilizing levers extending transversely of the truck and pivoted to said yokes and having their inner ends interconnected and having their outer ends connected to said bolster, there being yielding connections between said wheel pieces and the outer ends of said levers.

3. In a railway truck, a truck frame including wheel pieces, spaced transoms connecting said wheel pieces, and yokes depending from and connecting said transoms at points spaced inwardly of the truck from said wheel pieces and having spring seats intermediate said transoms, springs

mounted thereon, a bolster of inverted U section fitting over and supported by said springs, and stabilizing levers extending transversely of the truck beneath said bolster and pivoted to said yokes beneath said seats and having their inner ends interconnected and having their outer ends connected to said bolster, there being yielding connections between said wheel pieces and the outer ends of said levers.

4. A railway truck as described in claim 3 in which the yielding connections between the wheel pieces and the outer ends of the levers comprise snubbing devices, the snubbing devices, stabilizing levers and bolster being in substantial alignment transversely of the truck.

5. In a railway truck, a frame, springs supported therefrom, a bolster carried on said springs, stabilizer levers pivoted to said frame and extending from side to side of the truck, and links inclined from the vertical and pivotally connecting said levers and bolster, said links and stabilizer levers being constructed and arranged to counteract the overturning effect of lateral forces transmitted to the bolster from the vehicle body and thereby reduce to a minimum the amount of vehicle body roll in the direction of its lateral movement, there being a snubbing device connecting the outer end of each stabilizer lever and an adjacent part of the truck frame.

6. A railway truck as described in claim 5 in which the bolster supporting springs consist of upright coils, the upper ends of which, supporting the bolster, are adapted to yield laterally of the truck relative to the lower ends seated on the truck frame, and the snubbing devices being pivotally connected to the stabilizer levers and to the truck frame to accommodate lateral movement of the bolster on the frame.

7. In a railway truck, wheeled axles, a truck frame carried thereon and provided with fixed seats, coil springs on said seats, a bolster carried on said springs and movable thereon transversely of said frame, stabilizer structure having fixed pivots on said frame at a level below the level of said seats and extending from side to side of the truck, and links positioned outwardly of said springs and inclined from the vertical and pivotally connecting said structure and bolster, said links and stabilizer structure being constructed and arranged to counteract the overturning effect of lateral forces transmitted to the bolster from the vehicle body and thereby reduce to a minimum the amount of vehicle body roll in the direction of its lateral movement.

8. In a railway truck, wheeled axles, a truck frame carried thereon and provided with fixed seats, springs on said seats, a bolster carried on said springs and movable thereon transversely of said frame, stabilizer structure having fixed pivots on said frame at a level below the level of said seats and extending from side to side of the truck, and links inclined from the vertical and pivotally connecting said structure and bolster, said links and stabilizer structure being constructed and arranged to counteract the overturning effect of lateral forces transmitted to the bolster from the vehicle body and thereby reduce to a minimum the amount of vehicle body roll in the direction of its lateral movement.

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