May 19, 1964

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3,133,508

RAILWAY CAR TRUCKS

Filed Nov. 13, 1962

2 Sheets-Sheet 1

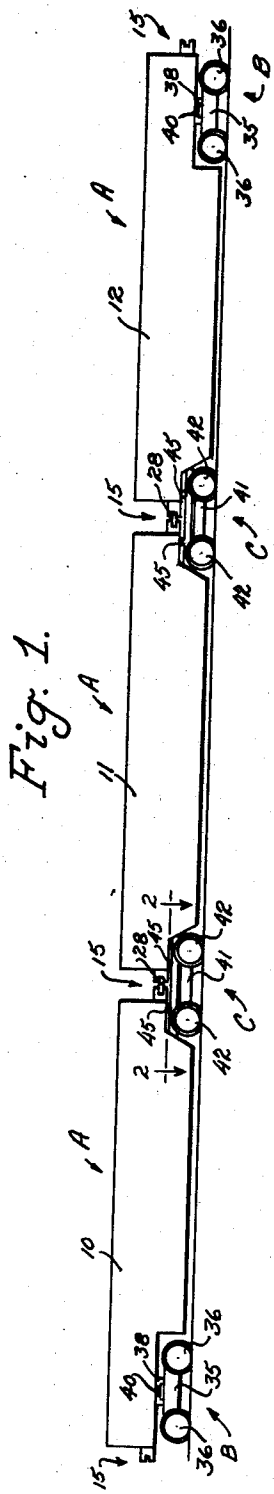


Fig. 1.

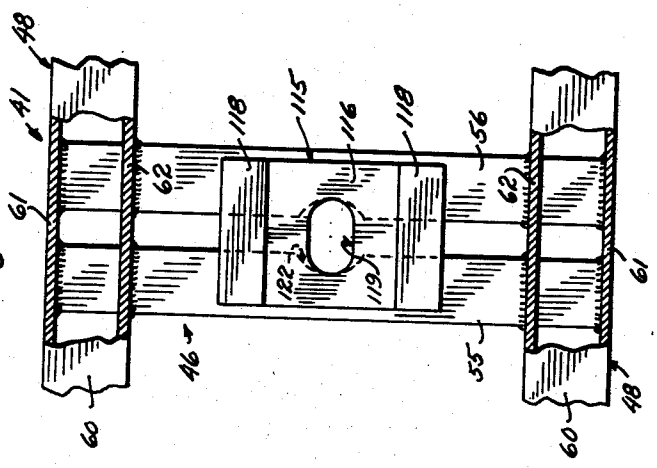


Fig. 5.

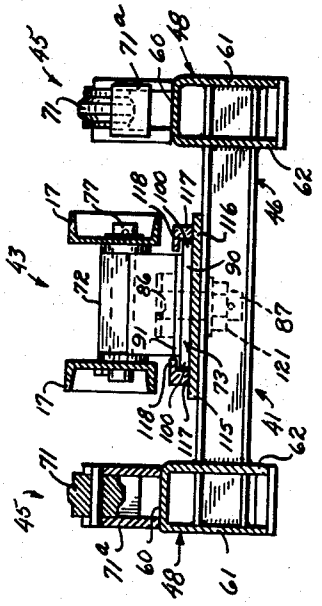


Fig. 4.

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Fig. 2.

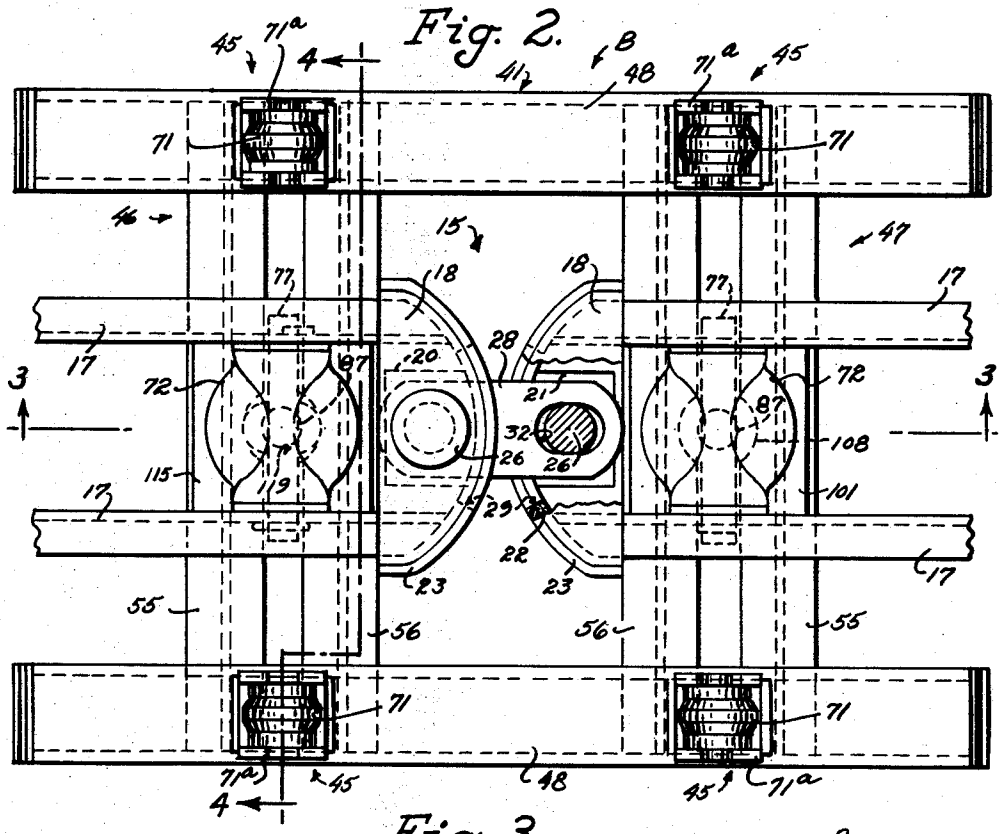
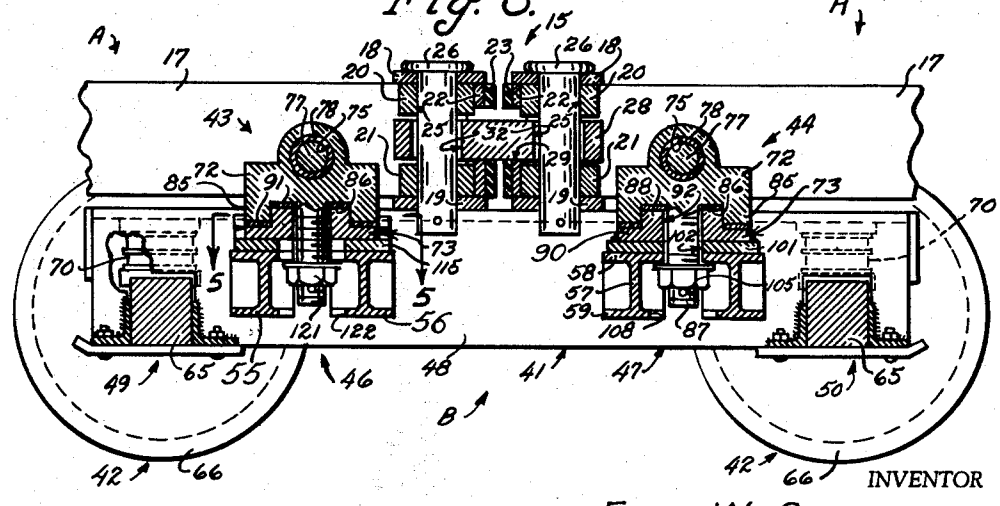


Fig. 3.



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RAILWAY CAR TRUCKS

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8 Claims. (Cl. 105—4)

This invention relates to improvements in railway car trucks, and more particularly to improvements in trucks for an articulated train of mine cars.

In articulated trains of mine cars there may be provided a truck at the end of each of the mine cars, such as shown in Patent No. 2,551,443, granted to Paul Laukus, Sr., on May 1, 1951, or the adjacent ends of mine cars may be both supported in an end-to-end relationship upon a single truck. The present invention is primarily concerned with the latter.

As noted in the aforementioned Patent No. 2,551,443, mine cars must be provided with trucks which are of a construction to enable them to carry a load over an irregular track and to support the mine car body in such a manner so that the truck may rock about a horizontal axis to adapt itself to uneven track, and pivot about an upright axis as when rounding curves, and swing as well as oscillate when rounding a curve and traveling over irregular track. Thus, when mounting the adjacent ends of two separate mine car bodies upon a single truck, a king pin is preferably provided for supporting each mine car body upon the truck.

In the mounting of adjacent ends of separate mine cars upon a single truck a drawbar is provided for interconnection of the adjacent ends of the car bodies. Such drawbars provide a certain degree of slack in order to permit the mine car bodies to move with respect to each other, such as when rounding a curve. When such play is provided between the car bodies, and if the king pin upon which the adjacent ends of the mine cars are supported are rigidly secured to a single truck, the draft and buff of the cars will be directly transmitted through the kin pin. King pins are not designed to sustain the shock loads of the draft and buff, and will therefore break down under such usage.

The primary object of this invention is the provision of a car truck for supporting the adjacent ends of separate mine cars in an end-to-end relationship, the car truck including a car support for each car, one of such car supports being fixedly secured to the truck, and the other car support being slidably interconnected to the truck, whereby to permit the slidably mounted car support to move in accordance with the draft and buff forces exerted between the cars, the shock load of draft and buff being taken up through the drawbar interconnecting the mine cars, rather than through the car truck.

A further object is the provision of a mine car body and truck therefor, in which adjacent ends of separate mine cars are mounted upon a single truck, the buff is transmitted through the bumpers of the mine cars and into the main sills of the cars, while the draft is transmitted through the drawbars and into the main sills. In such manner, the horizontal pull passing through the truck will only be equal to the force required to move the truck, which is minimal.

A further object is the provision of a safety factor in mine car trucks of the class described wherein the sliding car support is provided with a stop arrangement, whereby to take up the horizontal pull upon failure of the drawbar until the train can be stopped and repairs made.

Other objects and advantages of the invention will be apparent from the following detailed description, taken in connection with the accompanying drawings, forming a part of this specification, and in which drawings:

FIG. 1 is a side elevation of an articulated train of mine cars embodying the present invention.

FIG. 2 is an enlarged sectional view taken substantially on the line 2—2 of FIG. 1.

FIG. 3 is a sectional view taken substantially on the line 3—3 of FIG. 2.

FIG. 4 is a sectional view taken substantially on the line 4—4 of FIG. 2.

FIG. 5 is an enlarged sectional view taken substantially on the line 5—5 of FIG. 3.

In the drawings, wherein similar reference characters designate corresponding parts throughout the several views, the letter A may generally designate a mine car body, B one type of mine car truck, and C another type of mine car truck.

The mine car body A may be of any suitable construction and shape. In the example shown in FIG. 1, the train consists of articulated mine cars 10, 11 and 12, one end of each car 10 and 12 being supported upon a mine car truck unit B, and adjacent ends of cars 10 and 11, and 11 and 12 being supported upon mine car truck units C, in a manner which will be subsequently described.

Each end of each mine car A is preferably provided with bumper and coupling means 15 which is mounted upon the main sill 17 of each car.

Each bumper and coupling means 15 preferably includes upper and lower plates 18 and 19, brace blocks 20 and 21 respectively connected to the upper and lower plates 18 and 19, a frontal plate 22, and a resilient bumper portion 23 mounted upon the frontal plate 22. The upper and lower plates 18 and 19, and the respective blocks 20 and 21 are provided with aligned openings 25 which may receive a coupling pin 26 which secures a coupling link or drawbar 28 in place between adjacent bumper and coupling means 15. An aperture 29 is provided in the frontal plate 21 and bumper portion 23 for passage therethrough of the drawbar 28. The drawbar 28 is provided with an elongated slotted opening 32 through each end thereof for receiving a coupling pin 26. The openings 32 are elongated, extending axially for a greater distance than the diameter of the pins 26, so that horizontal play is permitted between the mine cars, thus allowing for distance variation between the cars on vertical curves. A train of cars is thus provided through interconnection of the coupling and bumper means 15 of the cars in an end-to-end relationship.

The mine car trucks B may be of any conventional construction, for instance, such as those shown in the aforementioned Patent No. 2,551,443, or such as that shown in Patent No. 2,513,266, granted to Paul Laukus, Sr., on June 27, 1950. These truck units each preferably include a body unit 35 having wheels 36, each mine car body being supported upon the truck body unit 35 by means of a king pin device 38 and having side bearing rollers 40, as is well known in the art.

Each mine car truck C preferably includes a frame 41, wheel means 42, car support means 43 and 44, and car balancing means 45.

Each frame 41 preferably includes bolsters 46 and 47, side frames 48, and axle housings 49 and 50.

Each bolster 46 and 47 preferably comprises a pair of spaced apart members 55 and 56, of substantially I-shaped transverse section, comprising a web 57, upper flanges 58, and lower flanges 59. The members 55 and 56 of each bolster 46 and 47 are preferably mounted with the webs 57 thereof in parallel arrangement transversely of frame 41. Car support means 43 and 44 are respectively mounted on bolsters 46 and 47, as will be subsequently described.

Each side frame 48 is preferably made mainly from a shaped plate or unit of inverted channel shape, having a horizontal web 60 and depending flanges 61 and 62.

In order to securely fasten the members 55 and 56 of each bolster 46 and 47 to the side frames 43, an opening is provided in each depending flange 62 of each side member 43, through which the members 55 and 56 pass, the members 55 and 56 being preferably welded to each of the depending flanges 61 and 62 of each side frame 43. The side frames 43 support car balancing means 45, as will be subsequently described.

Wheel means 42 preferably includes axles 65 mounted within the axle housings 49 and 50. Such axles may be supported in any suitable manner, for instance, in a manner such as that shown and described in the aforementioned Patents Nos. 2,513,266 and 2,551,443. The axles 65 form wheel mounts upon which the wheels 66 may be rotatably supported. A resilient spring-like member 70, shown as comprising a rubber sandwich, as disclosed in my application Serial No. 656,276, filed May 1, 1957, now abandoned, may be provided for flexibly supporting the axles 65, in lieu of the spring structure disclosed in the aforementioned Patents Nos. 2,513,266 and 2,551,443.

Car balancing means 45 preferably comprise rollers 71 mounted in housings 71a. Rollers 71 are mounted on side frames 43, four in all being provided, one to each side of car support means 43 and 44. The rollers to each side of a car support means cooperate with the car supported thereon, in a manner as disclosed in the aforementioned Patents Nos. 2,513,266 and 2,551,443.

The car support means 43 and 44 are each preferably in the nature of a king pin, each including a main housing 72 and a base 73.

The main housing 72 is provided with an opening 75 into which is received a pin 77 having a bushing 78. The pin 77 extends through the housing 72 and supports the sills 17 of one end of a mine car, as is shown in FIG. 4. Such mounting of the sills upon the housing 72 permits vertical pivotal movement of the mine car with respect to the car support means.

Each housing 72 likewise includes a depending annular leg portion 85, a recessed portion 86, and an elongated threaded shaft 87.

The base 73 preferably comprises a disc-like body portion 88 which interfits within the recessed portion 86 and a plate portion 90 which abuts against the lowermost end of leg portion 85. The base 73 is provided with a central aperture 92 through which the shaft 87 of the housing extends. Bushings or other suitable friction reducing means 91 may be provided at the points of abutment of housing 72 with the base 73 so that housing 72 may rotate on base 73, about shaft 87. Plate portion 90 extends axially of pin 77 beyond the outermost periphery of housing 72, defining ears 100, as shown in FIG. 4, for a purpose which will be subsequently described.

So far as the mounting of car support means 44 upon the truck is concerned, a mounting plate 101 is attached centrally of the members 55 and 56 of bolster 43, the plate 101 being provided with a central aperture 102 for passage of the shaft 87 therethrough. The base 73 of car support means 44 is welded, or otherwise fixedly secured to the plate 101. The shaft 87 extends intermediate the members 55 and 56, and is secured intermedially thereof by means of a fastener 105. A cutway portion 108 may be provided in each of the flanges 59 of members 55 and 56, for permitting facile access to the fasteners 105.

It will thus be seen that the mine car body which is supported upon car support means 44 may pivot vertically about pin 77, or may horizontally pivot about pin 87, but that such mine car is otherwise fixedly secured to the mine car truck and cannot move transversely or longitudinally with respect thereto. It is through this car support means 44 that the horizontal pulling force necessary to move the truck is transmitted.

In the mounting of car support means 43 upon the

mine car truck, a wear plate 115 is mounted upon the members 55 and 56 of bolster 46, such wear plate including a base portion 116, side members 117, and convergent horizontal members 118. The base portion 116, side members 117, and convergent members 118 define a track extending in a longitudinal direction with respect to the mine car truck, within which track are slidably received the ears 100 of plate portion 90. The wear plate 115 and the converging flange portions 58 of members 55 and 56 of bolster 46 are cut away to provide an elongated slot 119 which receives therethrough the shaft 87. A fastener 121 may be provided upon shaft 87 for maintaining the same within such slotted guideway.

An exaggerated spacing of the ears 100 within the track is shown to illustrate the free sliding action of the car support means 43. In reality, there will be a snug slidable engagement of the ears 100 in the track so that unwanted play will be eliminated.

It will thus be seen that car support means 43 is enabled, by means of slidable cooperation of the ears 100 of the base member 73 with the track formed by wear plate 115, to move in a direction longitudinally of the truck for a short distance. Thus, the draft and buff shock loads are taken up by the drawbar 28, the mine car body which is supported upon car support means 43 is permitted to slidably move in accordance with the taking up of the play between the cars, and such draft or buff load will therefore not be transmitted to the truck.

It is obvious that car support means 43 and 44 could be reversed, for it makes little or no difference which of the car support means is slidably supported upon the mine car truck.

A safety factor is likewise provided in this construction, inasmuch as if the drawbar 28 fails, shaft 87 would traverse the length of the elongated slot 119, to one end thereof, where it would be stopped by abutment with the wear plate 115 and the bolster upon which it is supported, so that the car could be brought to a stop and repairs could be made.

Various changes may be made to the form of invention herein shown and described without departing from the spirit of the invention or the scope of the following claims.

I claim:

1. Means for supporting the adjacent ends of a pair of railway cars in substantially an end-to-end relationship including a railway car truck having a frame, wheel mounts attached to said frame, wheel means mounted upon said wheel mounts, a first car support means, a second car support means, means for securing one railway car to each said car support means, means for attaching one of said car support means at a fixed position upon said frame, means for attaching the other of said car support means upon said frame in juxtaposition for movement with respect to the fixed one of said car support means in accordance with the draft and buff movement occurring between said pair of railway cars; and coupling means for interconnecting said pair of railway cars.

2. Means for supporting the adjacent ends of a pair of railway cars in substantially an end-to-end relationship as specified in claim 1 wherein each said car support means comprises king pin means including a main housing and a base, shaft means interconnecting a car to said main housing in juxtaposition for vertical pivotal movement with respect to said frame, and shaft means interconnecting said main housing to said base in juxtaposition for horizontal pivotal movement with respect to said frame.

3. Means for supporting the adjacent ends of a pair of railway cars in substantially an end-to-end relationship as specified in claim 1 wherein said means for attaching the other of said car support means upon said

frame in juxtaposition for movement with respect to the fixed one of said car support means in accordance with the draft and buff movement occurring between said pair of railway cars includes track means fixedly secured to said frame, and means mounted upon said car support means slidably interengaging said track means, said last mentioned means and said track means cooperating to guide the movement of said movable car support means with respect to the fixed one of said car support means.

4. Means for supporting the adjacent ends of a pair of railway cars in substantially an end-to-end relationship as specified in claim 1 wherein said coupling means includes means allowing for variation in the spacing apart of said pair of railway cars.

5. Means for supporting the adjacent ends of a pair of railway cars in substantially an end-to-end relationship as specified in claim 1 wherein said frame includes stop means mounted thereupon in juxtaposition for limiting the movement of the movable one of said car support means, said stop means being provided in juxtaposition to limit the movement of the movable one of said car support means with respect to said frame in the event of failure of said coupling means.

6. Means for supporting the adjacent ends of a pair of railway cars in substantially an end-to-end relationship including a railway car truck having a frame; wheel mounts attached to said frame; wheel means mounted upon said wheel mounts; a first car support means; a second car support means; each said car support means comprising a king pin means including a main housing and a base, shaft means interconnecting a car to said main housing in juxtaposition for vertical pivotal movement with respect to said frame, and shaft means interconnecting said main housing to said base in juxtaposition for horizontal pivotal movement with respect to said frame; means for attaching one of said car support means at a fixed position upon said frame; means for attaching the other of said car support means upon said frame in juxtaposition for movement with respect to the fixed one of said car support means in accordance with the draft and buff movement occurring between said pair of railway cars, said last mentioned means including track means mounted upon said frame, and said car support means including means for guided slidable movement of the movable one of said car support means with respect to the fixed one of said car support means; and coupling means interconnecting said pair of railway cars.

7. Means for supporting the adjacent ends of a pair of railway cars in substantially an end-to-end relationship including a railway car truck having a frame; wheel mounts attached to said frame; wheel means mounted upon said wheel mounts; a first car support means; a second car support means; each of said car support means comprising king pin means including a main housing and a base, shaft means interconnecting a car to said main housing in juxtaposition for vertical pivotal movement with respect to said frame, and means interconnecting said main housing to said base in juxtaposition for horizontal pivotal movement with respect to said frame; means for attaching one of said car support means at a fixed position upon said frame; means for attaching the other of said car support means upon said frame in juxtaposition for movement with respect to the fixed one of said car support means in accordance with the draft and buff movement occurring between said pair of railway cars; car balancing means mounted upon said frame in juxtaposition with respect to each said car support means for supporting a car as it pivots horizontally about the car support means upon which it is supported; and coupling means interconnecting said pair of cars.

8. A railway car truck for supporting the adjacent ends of a pair of railway cars in substantially an end-to-end relationship including a frame, said frame comprising a pair of spaced apart side frames, a pair of spaced apart bolsters extending transversely between and interconnected to said side frames, and axle housings mounted upon said side frames; axles mounted within said axle housings; wheels rotatably mounted upon said axles; a first car support means; a second car support means; each of said car support means comprising king pin means including a main housing and a base, shaft means interconnecting a car to said main housing in juxtaposition for vertical pivotal movement with respect to said frame; means interconnecting said main housing to said base in juxtaposition for horizontal pivotal movement with respect to said frame; means for mounting said base of each said car support means upon said frame; said means for supporting the base of one of said car support means upon said frame comprising means for attaching such car support means at a fixed position upon one of said bolsters, the other of said means for attaching the base of the other of said car support means to said frame including track means mounted upon the other of said bolsters, means provided upon said base slidably interengaging said track for guided movement with respect thereto and cooperating with said track means for movement of the car support means attached thereto with respect to the fixed one of said car support means in accordance with the draft and buff movement occurring between said pair of railway cars.

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