Feb. 20, 1945. J. C. TRAVILLA, JR 2,369,991

RAILWAY TRUCK STRUCTURE

Filed May 28, 1942 2 Sheets-Sheet 1

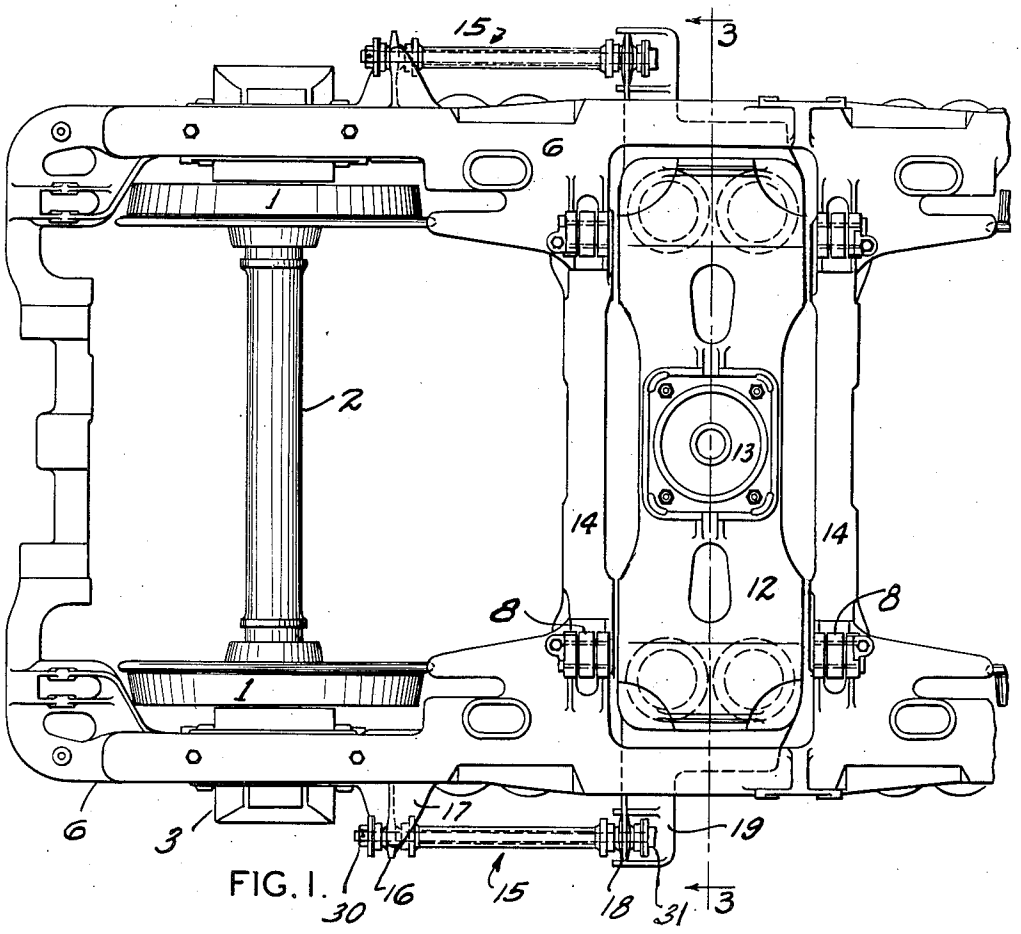


FIG. 1.

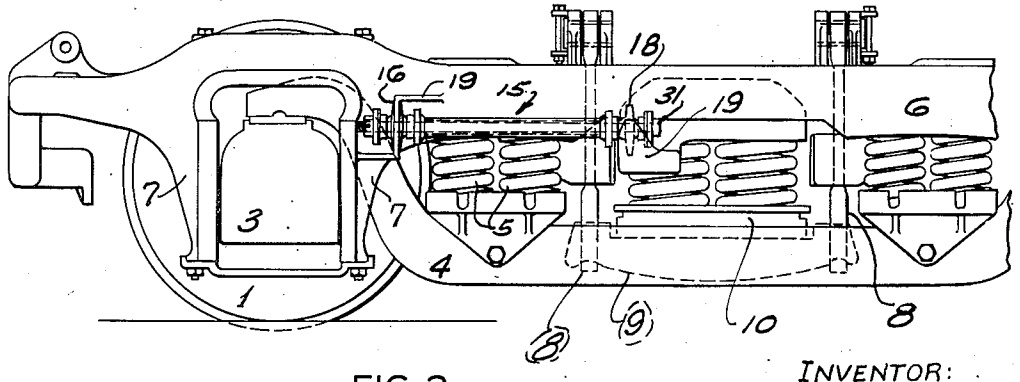


FIG. 2.

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RAILWAY TRUCK STRUCTURE

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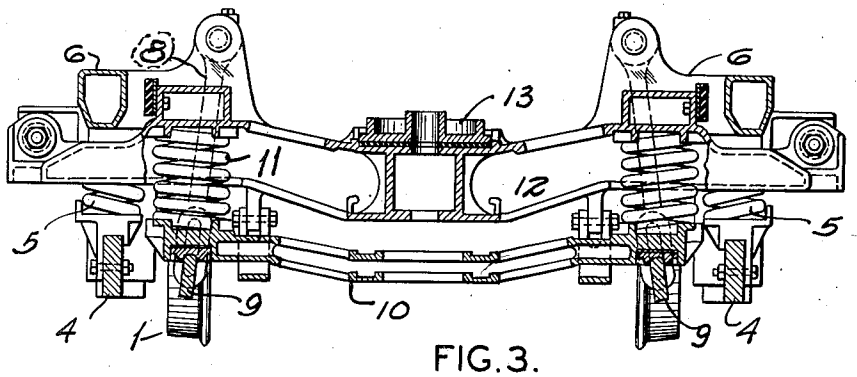


FIG. 3.

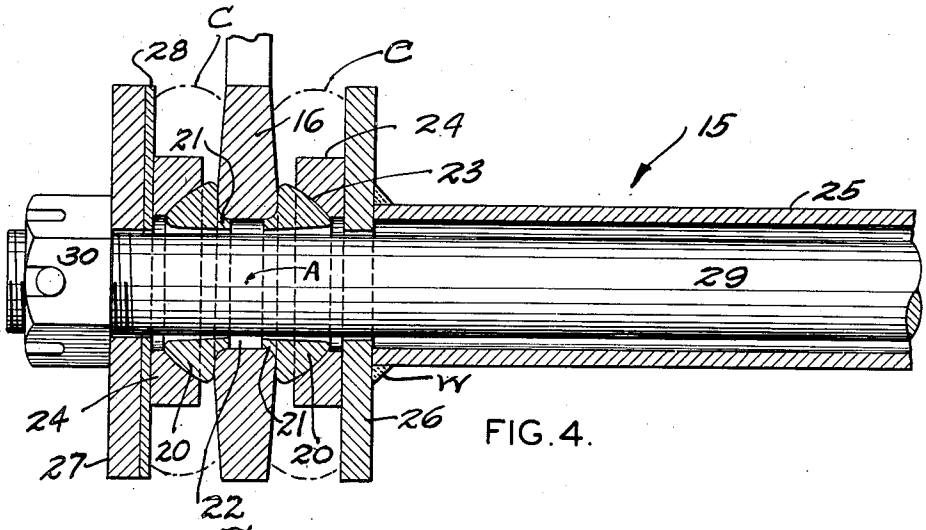


FIG. 4.

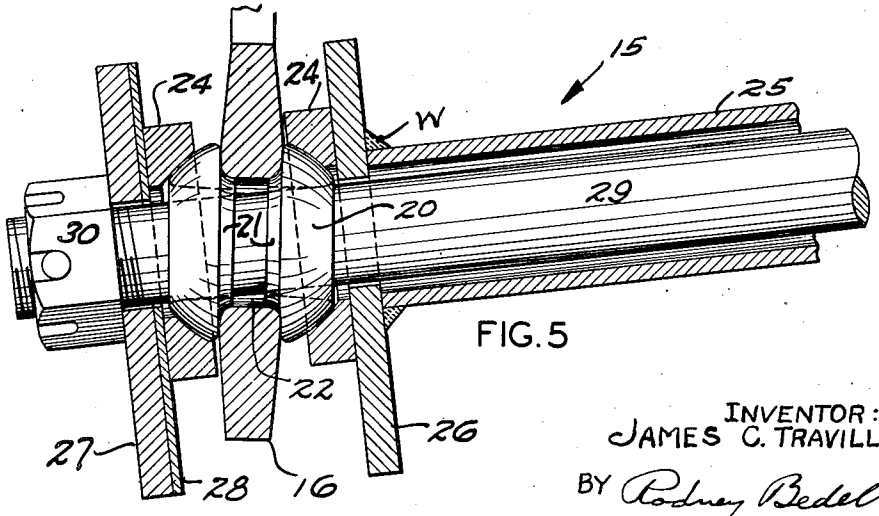


FIG. 5

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Patented Feb. 20, 1945 2,369,991

UNITED STATES PATENT OFFICE

2,369,991

RAILWAY TRUCK STRUCTURE

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Application May 28, 1942, Serial No. 444,811

4 Claims. (Cl. 267—66)

The invention relates to railway rolling stock, and more particularly to the anchoring of relatively movable main parts of a railway truck to each other so that desired movements may be accommodated and other movements may be resisted. Anchoring devices for the same general purpose are described in V. L. Green Reissue Patent 21,987, reissued December 30, 1941. Such anchoring devices have included yielding cushions of rubber-like material between the ends of the device and the truck parts to which it is connected.

The main object of the present invention is to anchor relatively movable truck parts to each other by a device of the general type referred to which will not require the use of rubber to accommodate the relative movement of the truck parts connected by the device and which can easily be adjusted to provide the desired frictional resistance against relative movement of the truck parts and to take up wear.

This and other detailed objects of the invention as will appear below are attained by the structure illustrated in the accompanying drawings, in which—

Figure 1 is a top view of one half of a four-wheeled truck, the parts shown being substantially duplicated at the other end of the truck.

Figure 2 is a side elevation of the structure shown in Figure 1.

Figure 3 is a vertical transverse section taken on the line 3—3 of Figure 1.

Figure 4 is an enlarged detail of one end portion of one of the anchoring devices.

Figure 5 is a similar enlarged section illustrating the action of the device when the truck main parts connected by it shift relative to each other.

The general truck structure is well known in the art and comprises wheels 1, axles 2, journal boxes 3, equalizers 4 extending between journal boxes at the same side of the truck and mounting coil springs 5 which support the truck frame 6 provided with pedestals 7 at opposite sides of the journal boxes. Swing hangers 8, suspended from the truck frame, carry cross bars 9 and a spring plank 10 which supports coil springs 11 carrying the bolster 12 having a center plate 13 on which the car body (not shown) is mounted. This construction provides for substantial movement of the bolster and frame relative to each other vertically of the truck, due primarily to the action of springs 11, and transversely of the truck, due primarily to the swinging of hangers 8.

At the same time, it is necessary to hold the bolster against movement longitudinally of the truck, which would result in its striking the transverse transoms 14 of the frame, and to attain this result there is provided an anchoring device 15 at each side of the truck, each device extending longitudinally of the truck and having its opposite ends connected to an upright flange 16 on a frame bracket 17 and to an upright flange 18 on a bolster bracket 19. The connections at the opposite ends of the anchoring device are preferably, but not necessarily, identical and the left hand connection is detailed in Figures 4 and 5, Figure 4 illustrating the position of the parts when the frame and bolster are in their normal relation and Figure 5 illustrating the parts when the bolster and frame have shifted relative to each other transversely of the truck.

Jaws 20 are applied to opposite sides of the bracket web, 16 for example. Each jaw comprises a segment of a sphere, there being an annular lip or boss 21 projecting from its flat side into an aperture 22 in web 16. The spherical outer face 23 of each jaw fits in a correspondingly concave surface of a seat or bearing member 24. A tubular spacer 25 extends between the inner bearing member 24 adjacent the frame flange and the corresponding inner bearing member adjacent the bolster flange. Preferably the spacer structure includes a relatively large diameter disc 26 for a purpose referred to below. This disc may be welded to the tube, as indicated at W. A similar disc 27 is applied to the outer bearing member 24 and may include one or more shims 28. If desired, shims similar to shim 28 may be provided between member 24 and disc 26. A rod 29 extends through elements 25, 26, 24, 20, 16, 27, and 28, and a nut 30, threaded onto the end of the rod, provides means for clamping the elements together, whereby frame flange 16 is gripped by jaws 20 and all of the parts are held against movement towards the end of the rod. The nuts 30 also provide means for adjusting the device so that the desired frictional resistance against movement of the truck parts can be obtained and at the same time wear between the frictional surfaces can be taken up.

The opposite end of the rod is shown as provided with a bolt head 31 (Figures 1 and 2) but both ends of the rod may be threaded and provided with nuts 30 if desired.

When the bolster and truck frame shift relative to each other transversely of the anchor-

ing device, whether vertically or laterally of the truck, jaws 20 will not move relative to the frame or bolster flanges 16 and 18 gripped between them but the other parts of the device will ride over the spherical surfaces on the jaws, centered at A, to the position shown in Figure 5 without offering substantial resistance to the relative shifting of the truck parts or to the inclination of the anchoring device from its normal position perpendicular to flanges 16 and 18. The interconnected truck parts will not move longitudinally of rod 28 or spacer 25, although there will be a slight movement of the bolster longitudinally of the frame due to the inclination of the anchoring device from the normal position indicated in Figure 1. Such relative movement of the bolster and truck frame is immaterial since it will be too small to permit these truck parts to contact with each other.

By providing the large diameter disc 26, 27, as shown, the elements 20 and 24 between these discs are interchangeable with cushions of rubber-like material, as described in the above-mentioned Green Reissue Patent 21,987, which could be substituted for elements 20 and 24 as indicated at C in Figure 4. If the inclusion of this interchangeable feature is not desired, then discs 26 may be omitted and tube 25 made longer or members 24 made thicker accordingly.

Figures 1 and 2 show the ball joint connection device at each end of the anchor structure, and this is the preferred arrangement, but the invention may be embodied in a structure in which a different type of pivotal connection is provided at one end of the anchor structure, such as, for example, the gripping of one of the truck parts between rubber pads, as mentioned above, or by any other universal joint type of pivotal connection.

These and other variations in the details of the structure may be made without departing from the spirit of the invention and the exclusive use of such modifications as come within the scope of the claims is contemplated.

What is claimed is:

1. In structure for anchoring one railway truck part to another relatively movable truck part, an elongated arm provided with device at its opposite ends for pivotally connecting the structure to the truck parts, at least one of said devices including a pair of jaw elements with substantially flat, opposing faces adapted to receive and clamp the truck part between them and with their outwardly facing surfaces comprising separable sections of a sphere, seat members having concave spherical surfaces receiving the spherical surfaces of said jaw elements, and means on said jaw elements for engaging the truck part between the jaw elements to hold the jaw elements against movement relative to the truck part transversely of the arm.

2. In structure for anchoring one railway truck part to another relatively movable truck part, opposed jaws each having the form of a segment of a sphere with their flat sides facing each other and spaced apart to receive between them an associated truck part to be anchored, an annular lip projecting from each flat side for fitting into an aperture in the associated truck part, a saucer-like bearing member fitted to the convex side of each jaw, an elongated rod extending through the jaws and the associated truck part between them centrally of said lips, and means on said rod engaging said members to hold them and said jaws against movement longitudinally of the rod and away from each other.

3. A device for connecting two structures so as to transmit thrust in a line from one structure to the other structure while accommodating relative movement of the structures transversely of such line, comprising an elongated arm arranged to be disposed with its axis along the line of thrust to be transmitted, means for pivoting one end of the device to one structure, and means for connecting the other end of the device to the other structure and including spaced members on said arm held against movement axially away from each other, each having a concave bearing surface opposing and spaced from a similar surface on the other member, said surfaces facing axially of the device, opposing jaws slidably seated on said bearing surfaces so as to tilt thereon and spaced apart axially of the arm to grip between them a portion of one of the structures to be connected by the device and provided with a central boss arranged to be received in an aperture in the structure gripped between them.

4. In structure for anchoring one railway truck part to another relatively movable truck part, an elongated rod, a pair of jaws slidably mounted on the rod each having the form of a segment of a sphere disposed transversely of the rod axis and having a boss projecting from its flat side axially of the rod for entering an aperture in one of the truck parts to be anchored, a saucer-shaped bearing member surrounding the rod and fitted to the convex side of each jaw, and means adjustable axially of the rod and associated with the bearing members to limit their movement longitudinally of the rod.

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