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ARTICULATE RAILWAY CAR CONNECTOR AND TRUCK

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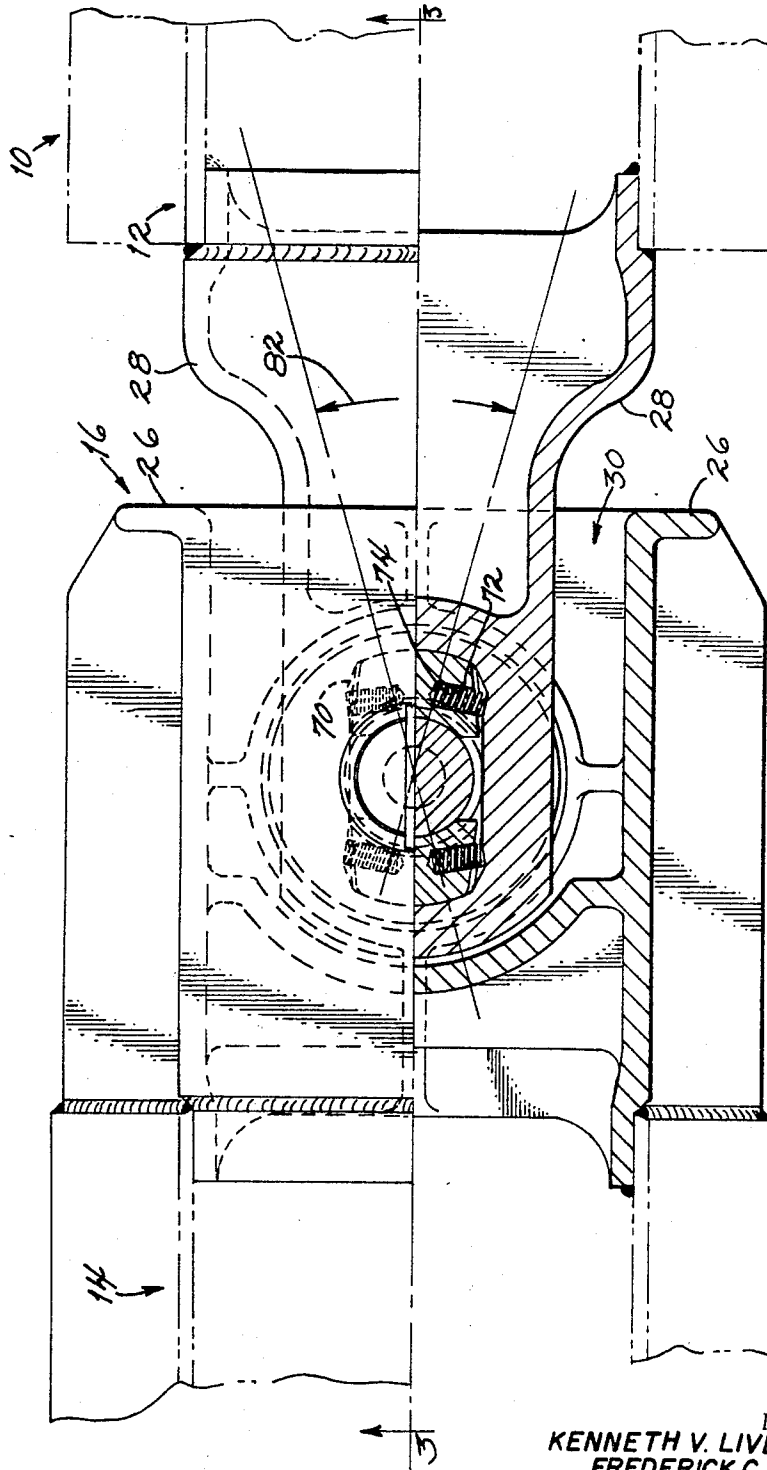


FIG. 2

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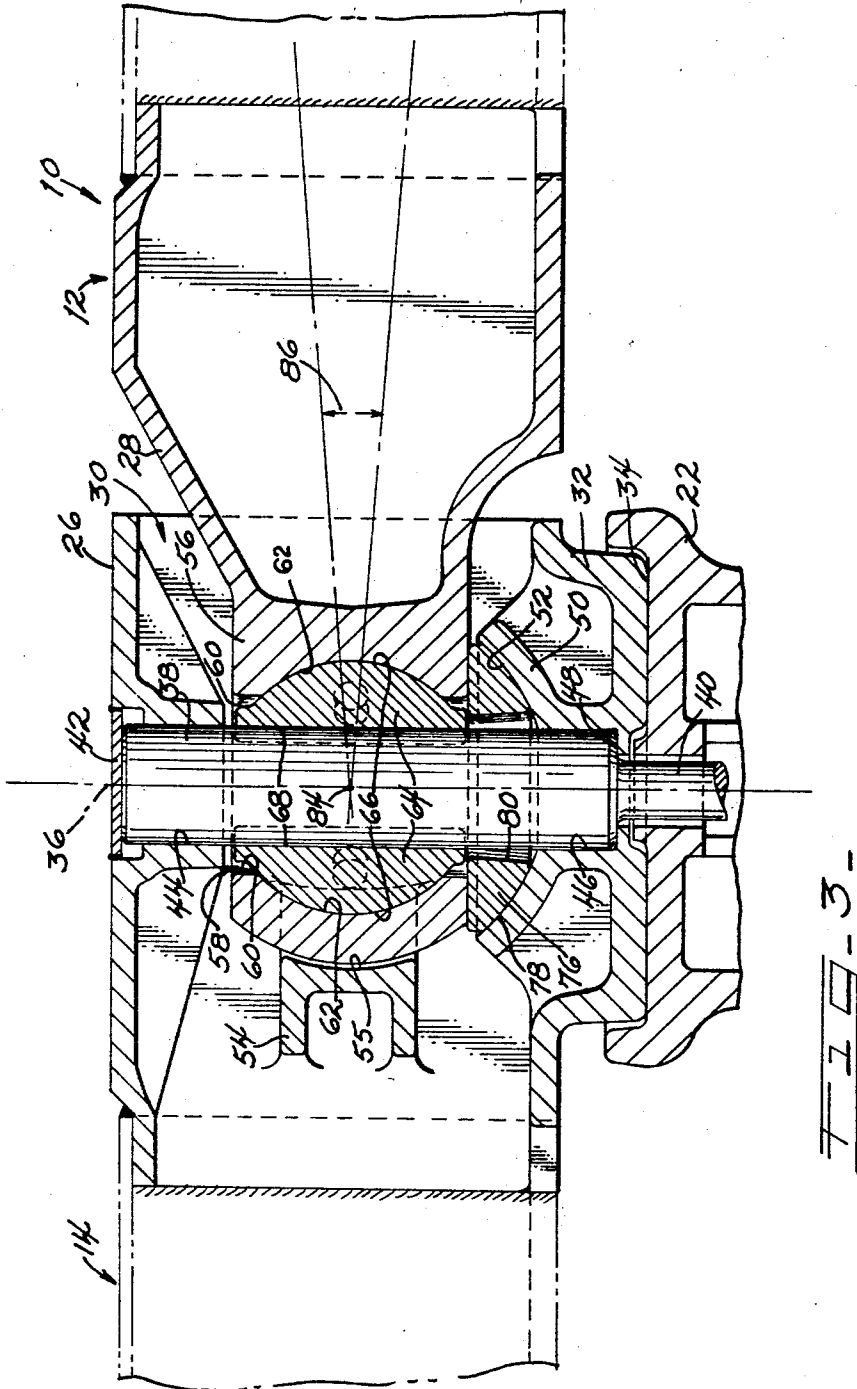
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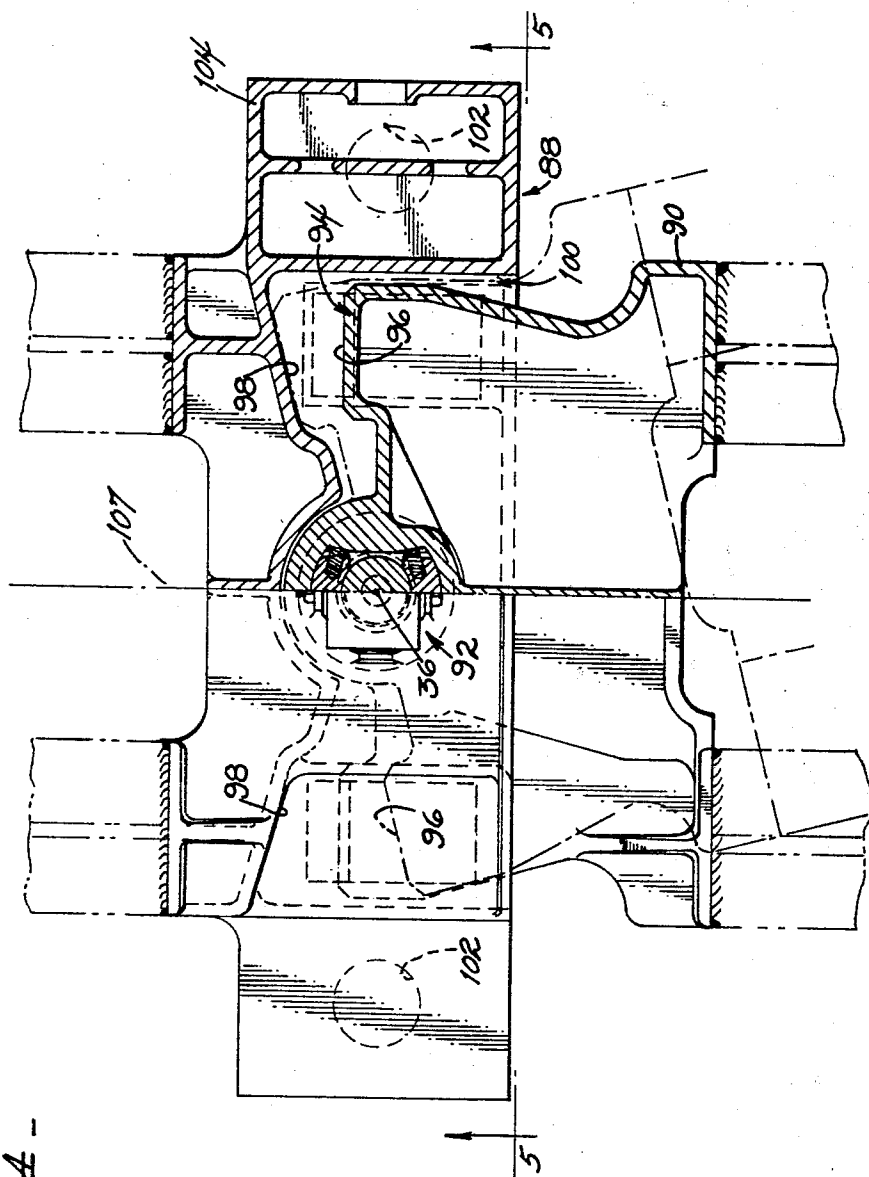
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ARTICULATE RAILWAY CAR CONNECTOR AND TRUCK

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ABSTRACT OF THE DISCLOSURE

In a universal connector for railway cars, a male connector telescopes within a female connector and is pivotally connected thereto by a pin for horizontal movement. The male connector is seated on a spherical bearing that is in sliding engagement with a spherical bearing surface in the bottom of the female connector. Opposed spherical bearings are biased against opposed spherical bearing surfaces in the male connector on opposite sides of the pin and are engageable with said pin for vertical pivotal movement between the two connectors.

The present invention relates to a connector for an articulated railway car. It has particular adaptability to connecting the sections of a flat car that may be utilized for hauling trailers.

A broad object of the invention is to provide novel means for connecting the sections of an articulated railway car whereby to enable the car to be moved into more confined spaces, and to facilitate movement therewithin, and additionally to enable movement of the car closer to objects, such for example as docks.

Another object is to provide novel connecting means of the foregoing character which is used in conjunction with a single truck which supports the adjacent ends of sections of a railway car.

An additional object is to provide connecting means of the foregoing general character which provides universal movement between the sections of the car.

An additional object is to provide connecting means of the character referred to, of which the parts are easily connected, and which is simple and strong.

Other objects and advantages of the invention will appear from the following detail description taken in conjunction with the accompanying drawings wherein:

FIGURE 1 is a side view of a railway car made up of two sections, incorporating the connecting means of the present invention and showing a trailer on each of the sections of the car;

FIGURE 2 is a large scale view, partially in section, of the connecting means, taken at line 2-2 of FIGURE 1;

FIGURE 3 is a sectional view taken at line 3-3 of FIGURE 2;

FIGURE 4 is a view similar to FIGURE 2 of a modified form of connecting means; and

FIGURE 5 is a sectional view taken at line 5-5 of FIGURE 4.

Referring now in detail to the accompanying drawings FIGURE 1 shows schematically a railway car 10 which includes two sections 12 and 14 connected together by the novel connector means 16 of the present invention. The car sections 12 and 14 are supported at their outer ends by trucks 18 and the two adjacent ends are supported by a common truck 20 which in itself may be of known type and may be similar to the trucks 18. The truck 20 includes a bolster 22 supporting the connector means 16. Trailers 24 are shown carried by the car sections.

The connector means 16 provides limited universal movement between the car sections and attention is di-

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rected to FIGURES 2 and 3 showing the details of construction of one form of the invention. The car sections 12 and 14 are shown in these views, being provided with connector parts 28 and 26 respectively, arranged for telescoping interengagement. The connector part 26 is a hollow female part having a cavity 30 at least partially funnel shaped (see FIGURE 3) for receiving the male part 28. The connector part 26 rests directly on the bolster 22, having a seating boss 32 for that purpose, received in a shallow recess 34 in the bolster, the connector part 26 being thus arranged for swivelling movement about a vertical axis 36 defined by a pin 38 mounted in the connector part. This pin also serves as the means for directly connecting the two connector parts as will be referred to again hereinbelow. The pin has a lower reduced extension 40 extending through an aperture in the bolster. The pin 38 is held in position by a pin retainer 42 secured in place as by welding, the pin being mounted in tubular bearing elements 44 and 46 and directly supported vertically by a shoulder 48. The lower bearing element 46 merges upwardly into a dish 50 having an upper concave spherical supporting surface 52 to be referred to again hereinbelow. A boss or stop element 54 with an outer dished surface 55 is positioned in the inner end of the cavity 30 for limiting the movement of the connector part 28 in the connecting operation.

The connector part 28 has a terminal or outward extension 56 with a vertical aperture 58 therethrough, the aperture having upper and lower end portions 60 which may be cylindrical in shape and a central longitudinally enlarged portion having end bearing surfaces 62 of spherical shape.

A pair of bearing members 64 are fitted in the vertical aperture 58, these bearing members having outer spherical surfaces 66 of the same radius as and engaging the surfaces 62. These bearing members have inner surfaces 68 cylindrical in form and engaging the pin 38.

The side surfaces of the vertical aperture 58 are provided with recesses 70 (FIGURE 2) on opposite sides and at each end, while the bearing members 64 are provided with bores 72 in register with those surfaces. Compression springs 74 are fitted in the bores and bear against the bottoms of the bores and the surfaces 70, to snugly retain the bearing members in centered position.

Another bearing member 76 is provided, annular in shape and of relatively flat proportions. This bearing member has a convex spherical under surface 78 of the same radius as and engaging the spherical concave surface 52 and having a central hole 80 for receiving the pin 38.

To connect the parts, the first step is to insert the bearing members 64 with the springs 74 therein into the aperture 58 and place them at the outer ends of the aperture with the spherical surfaces 66 in engagement with the corresponding spherical surfaces 62, whereupon the springs, in engaging in the recesses 70, retain the bearing members in the aperture 58. Then with the pin 38 removed, and the bearing member 76 in place, the connector part 28 is inserted in the connector part 26 to a position in which the space between the bearing members 64 is aligned with the bearing elements 44 and 46, or substantially so, the stop 54 being utilized for so aligning it. Thereupon the pin 38 is inserted, and the part 28 rests on the bearing member 76.

The connector parts are enabled to swivel horizontally, about the vertical axis 36 in the articulating movements of the car sections. In these swivelling movements, the bearing members 64 slide or oscillate on the pin 38. The angle of such oscillation is indicated at 82 (FIGURE 2) and may be on the order of a total of 10°, or 5° each side of center. In these oscillating movements the bearing

members 64 are carried with the connector part 28, the springs 74 retaining the bearing members substantially in position, but yielding a limited extent in the swivelling movements.

The connector parts are also capable of swivelling about a horizontal axis 84 as indicated by the arrow 86. Such vertical swivelling movements may be on the order of a total of 10°, or 5° each above and below the horizontal. The spherical shape of the surfaces 62 and 66 accommodate such vertical swinging movements not only when the bearing members 64 are in perfectly centered position, but also if they should be momentarily out of that position. The bottom bearing member 76 receives the vertical thrust from the connector member 28 and follows with the latter in the swivelling movements, particularly the vertical swinging movements, the spherical surfaces accommodating those movements.

The modification of the device shown in FIGURES 4 and 5 includes the features described above together with means for stabilizing the connector parts against excessive rocking movement about a horizontal axis longitudinally of the car. This modification also has special detail construction limiting mutual swivelling movement of the connector parts about a vertical axis.

In FIGURES 4 and 5 connector parts 88 and 90 correspond with the connector parts 26 and 28. Bearing means indicated as a whole at 92 is provided for directly connecting the connector parts together and this bearing means may be similar in all material respects to that described in detail hereinabove and a description of the present specific bearing means is believed unnecessary.

The outermost end of the connector part 90, indicated at 94 is of substantial width having abutment surfaces 96 at its lateral extremes engageable with corresponding surfaces 98 in the cavity 100 in the connector part 88. The dimensions and proportions are such that lateral swivelling movements about the vertical axis 36 may be on the order of a total of 30°, or 15° on each side of center.

The connector member 88 is supported on the bolster 22 in the manner described above which includes seating member 32 on the connector member and a recess 34 on the bolster. In addition, side supports 102 are provided on the bolster for engagement by side wings 104 of the connector part 88. The supports 102 may have vertically adjustable elements 106 for varying the space between the support and the connector part. These support members thus limit rocking movement of the connector about a horizontal axis 107 longitudinally of the car.

Additionally means is provided for limiting relative rocking movement between the two connector parts about the same axis 107. Referring to FIGURE 5 it will be seen that the side wing portions 94 of the connector part 90 are confined between upper and lower elements 108 and 110 of the cavity 100 for limiting the rocking movement referred to. If desired, wear plates 112 may be provided on the engageable elements, between the two connector parts as well as between the wings 104 and the support members 102.

While we have herein disclosed certain preferred forms of the invention it will be understood that changes may be made therein within the spirit and scope of the appended claims.

We claim:

1. In combination with a railway truck having side-

frames mounted on wheel and axle assemblies and a bolster resiliently supported on the sideframes, a universal connector comprising a female connector part, means to rotatably mount said female part on said bolster, a cavity in said female part, a lower and an upper vertically aligned aperture in said female part opening into said cavity, a concaved bearing surface in said cavity merging into the lower aperture, bearing means in sliding engagement with the concaved bearing surface, aperture means in the bearing means alignable with the upper and lower apertures, a male connector means projectable into said cavity and engageable with said bearing means, a vertical aperture through said male connector alignable with the upper and lower apertures, a centrally located longitudinally enlarged bearing cavity in said vertical aperture in the form of a spherical segment, opposed spherical bearing surfaces in said bearing cavity, opposed bearing members in respective sliding engagement with said opposed spherical bearing surfaces, resilient means biasing said bearing members outwardly against said opposed spherical bearing surfaces and pivotal means projecting through all of said apertures to pivotally connect the female part with the male connector means.

2. The invention set out in claim 1 wherein the spherical segment has irregular sides.

3. The invention set out in claim 2 wherein the concaved bearing surface is spherical in shape and the bearing means is a chordal spherical sector.

4. The invention set out in claim 1 wherein a boss having a dished surface is positioned in the inner end of the cavity, and wherein the male connector means has a dished end corresponding to the dished surface of said boss for slideable engagement with said dished surface when said male connector is projected into said cavity and is seated on said bearing means.

5. The invention set out in claim 4 wherein all of said apertures are aligned when said dished end is in sliding engagement with said dished surface.

6. A universal connector according to claim 1 wherein in a least one of the connector parts has laterally extending wings, and wherein means are provided on the bolster proximate said wings to contact the wings to limit rocking movement of the universal connector relative to the bolster about a horizontal axis extending in the direction of the connection of the parts.

7. A universal connector according to claim 1 wherein the connector parts are of substantial width and have interengageable elements at laterally spaced points to limit rocking movement between the connector parts about a horizontal axis extending in the direction of the connection of the parts.

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