Feb. 28, 1961 W. J. METZGER 2,973,105

DRAFT RIGGING FOR RAILWAY VEHICLES

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Fig. 1

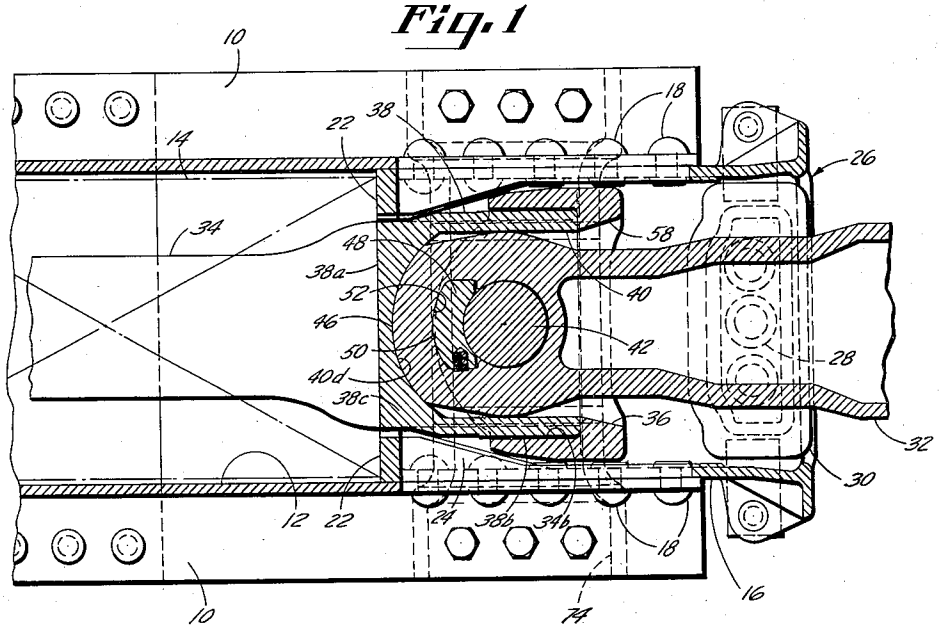
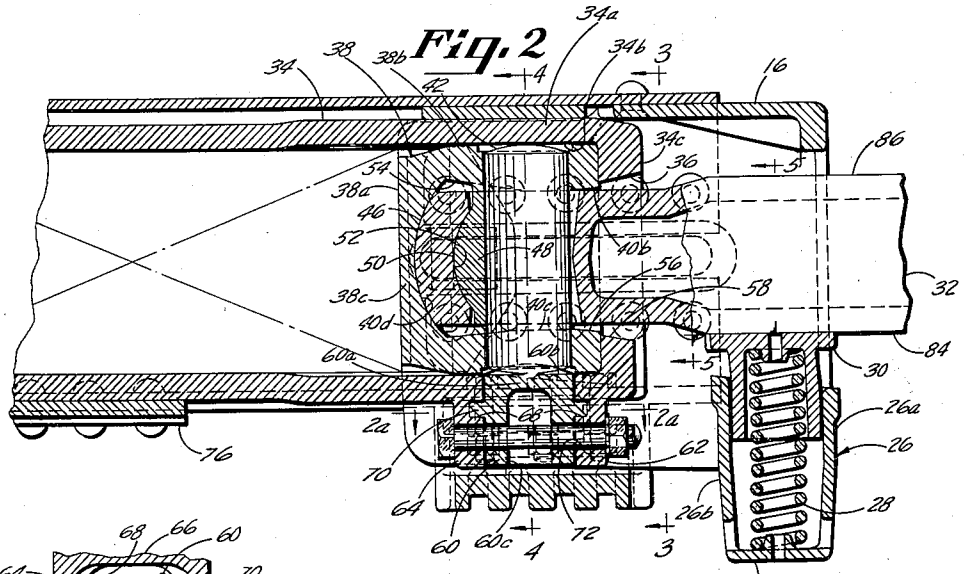


Fig. 2



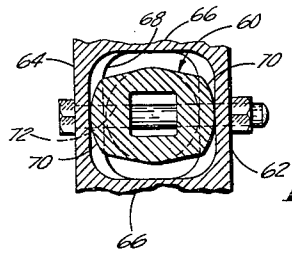


Fig. 2a

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Fig. 3

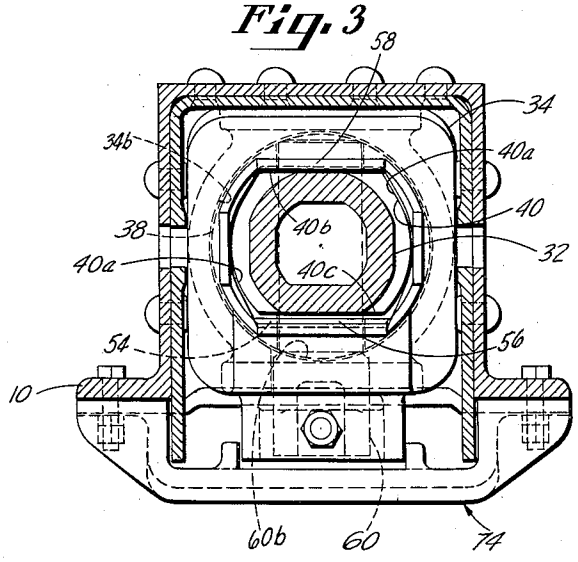
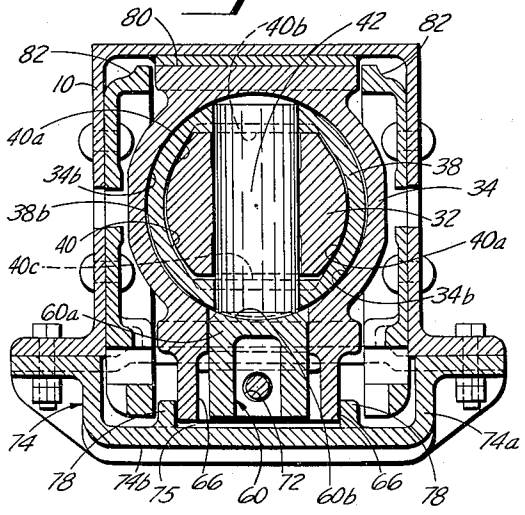


Fig. 4



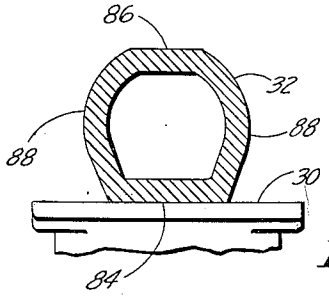


Fig. 5

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DRAFT RIGGING FOR RAILWAY VEHICLES

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Filed Oct. 4, 1954, Ser. No. 460,164

10 Claims. (Cl. 213—71)

This invention relates to draft rigging for railway vehicles, and more particularly to a coupler shank and draft gear yoke construction, to permit rotation of the coupler about its longitudinal axis.

This application constitutes a continuation-in-part of my co-pending application, Serial No. 406,828, filed January 28, 1954.

It is usual practice in dumping loaded freight cars of the open top or hopper type, containing ore, coal, etc., to pass one or two cars over a rotary type car dumper. Such cars, either singly or in pairs, are uncoupled from the train at the base of the inclined track leading to the car dumper and are hauled up the incline by a cable or Barney car to the proper position on the cradle of the machine. After a car has been dumped, the succeeding car to be dumped is hauled up the incline and it pushes the empty car from the cradle, whereupon the empty car coasts down a grade and is subsequently switched to the yard where the empty cars of the train are coupled together.

My invention eliminates the necessity of uncoupling and separating loaded cars from the train and hauling them onto the car dumper. The invention permits dumping of cars without separating them from the train. Thus the entire train is passed through the car dumper and as the cars reach the cradle of the dumper they are rotated about a horizontal axis passing through the longitudinal center lines of the car couplers to unload their contents and then are rotated to normal position. This considerably shortens the time required to unload a train of cars and results in considerable saving in cost.

More specifically, my invention provides a coupler shank and yoke construction which permits the vehicle to which the device is applied to be rotated at least 180° about the longitudinal center line of the coupler shank. Preferably, one end of the vehicle is provided with a coupler having conventional or non-rotary attachment thereto, while the other end is provided with the rotatable coupler. In assembling a train of these vehicles, a rotatable coupler is always coupled with a non-rotatable coupler. In this manner, upon the completion of each dumping operation, the couplers will aways be disposed in upright or normal position.

It is therefore an object of my invention to provide a coupler shank and yoke construction which permits vehicles to be rotated at least 180° during car dumping operations while the vehicles remain coupled in train.

Another object is to provide a coupler shank and yoke connection which permits the coupler to rotate relative to the yoke.

A further object is to provide a coupler shank and yoke connection which, while permitting the coupler to rotate about its longitudinal axis independently of the yoke, permits the use of a conventional draft gear with the yoke.

A still further object is to provide a coupler shank and yoke connection which permits rotation of the coupler about its longitudinal axis and which is easy to assemble and disassemble.

A yet further object is to provide a coupler shank and yoke construction which permits rotation of the coupler about its longitudinal axis, and which is applicable to cars having standard end sill structure without the necessity of making any changes in the structure.

Other objects and advantages of the invention will be apparent from the following description taken in conjunction with the drawings in which:

Fig. 1 is a horizontal sectional view showing an embodiment of my invention.

Fig. 2 is a vertical sectional view of the embodiment shown in Fig. 1.

Fig. 2*a* is a horizontal sectional view taken along line 2*a*—2*a* of Fig. 2.

Fig. 3 is a transverse vertical sectional view taken along line 3—3 of Fig. 2.

Fig. 4 is a transverse sectional vertical view taken along line 4—4 of Fig. 2.

Fig. 5 is a transverse vertical sectional view taken along line 5—5 of Fig. 2.

Referring to the drawings there is shown the car underframe, which is of standard construction, comprising a pair of longitudinal members **10** which are spaced apart the usual distance to form draft gear pocket **12** for receiving a conventional draft gear **14** (shown in dot-dash). Striking casting **16** is secured to the forward end of members **10** by means of rivets **18**.

Transverse abutments are provided on striking casting **16** to form the front stop lugs **22** of draft gear pocket **12**. Stop lugs **22** are suitably reinforced by ribs **24**. At its lower forward end striking casting **16** is formed with an integral spring carrying member **26** comprising front wall **26***a*, rear wall **26***b*, and bottom wall **26***c*. Carrier springs **28** rest on bottom wall **26***c* and support the coupler carrier member **30** on which the coupler shank **32** rests.

The yoke **34** to which the coupler shank **32** is connected for rotational movement about its longitudinal center line or axis comprises at its forward end a head portion **34***a* having a cylindrical inner surface **34***b* which is concentric about the longitudinal axis of the yoke. Head portion **34***a* has an inwardly extending annular flange **34***c* which defines opening **36** through which shank **32** extends.

Rotatably mounted within the yoke head **34***a*, for movement about the longitudinal axis of the yoke, is a piston-like member **38**, which is recessed as at **40** to receive the coupler shank **32**. Member **38** is pivotally connected to shank **32** by means of pin **42** to enable horizontal angling of the coupler relative to the yoke. The rear or abutment portion **38***c* of member **38** comprises a flat vertical surface **38***a* for engagement with the forward end of the draft gear. The outer surface **38***b* of member **38** is cylindrically curved and is in rotatable contact with inner surface **34***b* on the yoke. Forward movement of member **38** relative to the yoke is limited by the flange **34***c*. The side surfaces **40***a* of recess **40** in member **38** are cylindrically curved while the top and bottom surfaces **40***b* and **40***c* thereof are flat in order to strengthen the section surrounding pin **42** as well as to provide increased bearing area for the pin. The end surface **40***d* of recess **40** is preferably spherically curved and engages the complementary surface **46** of the coupler shank. The contact between surfaces **40***d* and **46** relieves pin **42** of buffing stresses. It will be noted that member **38** serves to transmit both buffing and draft forces to the draft gear. When the coupler is subjected to a draft force, member **38** transmits the force from coupler pin **42** to flange **34***c* of the yoke, the force then being transmitted from the yoke to the draft gear. When the coupler is subjected to a

buffing force, the force is transmitted from shank 32 through surfaces 46 and 40*d* to rear portion 38*c* of member 38 and thence directly to the draft gear.

The construction shown allows for vertical as well as horizontal angling of the coupler. Within the pin receiving opening in the coupler shank is the bearing block 48 which is in engagement with the rearward side of pin 42 and with the shank, the engaging surfaces 50 and 52 between the block and shank, respectively, being spherical. This enables vertical angling movement of the coupler relative to the yoke and pin 42. The top and bottom surfaces 40*b* and 40*c* of recess 40 are flared at their inner and outer ends as at 54 and 56 to allow sufficient clearance for vertical angling of the coupler shank. Opening 36 is likewise provided with a flared surface 58 to accommodate vertical as well as horizontal angling of the coupler.

Pin 42 is supported within the confines of cylindrical member 38 by means of support member 60, the body of which is cylindrical in shape. The underside of the yoke head is recessed to receive the upper portion 60*a* of the support member. Portion 60*a* has its top surface 60*b* cylindrically curved about the longitudinal axis of the yoke in the same manner as surface 34*b* in the yoke head and thus forms a continuation of surface 34*b*. This permits free rotation of pin 42 with rotary member 38 relative to the yoke head inner surface 34*b* during car dumping operations.

The yoke head 34*a* is formed on its underside with a depending box-like portion comprising front wall 62, rear wall 64 and side walls 66 for housing the support member 60. Front and rear walls 62 and 64 are provided with transversely extending shoulders 68 on which rest the ears 70 of support member 60. The support member has an opening 72 for receiving a bolt member which extends through walls 62 and 64 and locks the support member in place. The support member is applied to the yoke in a position 90° removed from that shown in Figs. 2 and 2*a*, in which the ends of ears 70 lie adjacent to, but clear of side walls 66. Member 60, while in this position, is raised until ears 70 are disposed at a level just above that of shoulders 68, after which it may be rotated 90° to the position shown in the drawing. Member 60 is preferably recessed as at 60*c* for receiving a suitable implement for facilitating the application of the member to the yoke.

The forward portion of the car underframe is tied together by means of yoke support 74. Support 74 comprises side walls 74*a* and bottom wall 74*b* which form a channel-shaped well for receiving the lower part of the yoke, as seen in Fig. 4. It will be understood that pivot pin 42 and its support 60 are applied to the yoke prior to the application of yoke support 74 to the underframe. A slight clearance as at 75 normally exists between the box portion of the yoke and bottom wall 74*b* of support 74. However, upon the application to the yoke by the coupler of a downward force, the box portion may engage support 74 to limit downward movement of the assembly. The rearward portion of the yoke is supported by transverse plate member 76 secured to the underframe.

It will be apparent that my construction permits rotation of the coupler about its longitudinal axis in either direction, the yoke remaining stationary relative to the vehicle underframe as the coupler, cylindrical member 38 and pin 42 rotate. As may be seen in Fig. 4, side walls 66 of the depending box-like portion of yoke 34 extend between upstanding lugs 78 of yoke support 74. Thus, engagement between walls 66 and lugs 78 in conjunction with the engagement between top strap 80 of yoke 34 and guide lugs 82 of the striking casting will serve to hold the yoke stationary upon rotation of the coupler during dumping operations.

The coupler shank 32 is formed with a flat bottom wall 84 (Fig. 5) to provide a large bearing area between wall 84 and the carrier member 30 to give vertical stability

to the coupler. Top wall 86 of the shank is flat to provide sufficient clearance between the shank and the top wall of the striking casting for vertical angling of the coupler. Side walls 88 are rounded to facilitate rotation of the coupler on carrier 30 during car dumping operations. It will be understood that since the coupler shank bottom wall is flat, the carrier 30 will be depressed against the compression of springs 28 during the initial rotation of the coupler about its axis.

My invention is preferably applied to one end of a railway vehicle only and the rotatable coupler must therefore be coupled to a non-rotatable coupler of an adjacent car. This in no way interferes with the dumping of vehicles in train, but assures that the couplers will always return to upright position after a car has been dumped and returned to normal position.

The terms and expressions which I have employed are used as terms of description and not of limitation, and I have no intention, in the use of such terms and expressions, of excluding any equivalents of the features shown and described or portions thereof, but recognize that various modifications are possible within the scope of the invention claimed.

What I claim is:

1. In a railway draft rigging a yoke, the forward end of said yoke having a cylindrical inner surface extending longitudinally of the yoke, a rotatable cylindrical member within the forward end of said yoke in engagement with said surface, said member comprising a rear wall for buffing engagement with an associated draft gear and a coupler shank pivotally connected to said member.

2. In a railway draft rigging a yoke having a head portion, a cylindrical member disposed in said head portion and being rotatable relative thereto about an axis extending longitudinally of the yoke, said member comprising a rear wall for buffing engagement with an associated draft gear, and a coupler shank pivotally connected to said member.

3. In a railway draft rigging a yoke, a piston-like member within said yoke, said member comprising a rear wall for buffing engagement with an associated draft gear, and a coupler shank pivotally connected to said member and being in engagement with said rear wall.

4. In a railway draft rigging a yoke comprising a head portion having a cylindrical inner surface extending longitudinally of the yoke, and means carried in said head portion for connecting a coupler shank to said yoke to permit rotation of the coupler about its longitudinal axis, said means comprising a piston-like member rotatable within said head, said member being recessed for receiving a coupler shank, said member having a rear wall for engagement on one side thereof with an associated draft gear and on its other side with a coupler shank.

5. In a railway draft rigging, spaced center sills, a yoke movable longitudinally between said sills, said yoke having a head portion, a piston-like member rotatable in said head portion about an axis extending longitudinally of said yoke, a coupler shank pivotally connected to said member, said shank and member being rotatable about the longitudinal axis of the coupler, and abutment means carried by said sills and engageable with said yoke for preventing rotation of the yoke upon rotation of the coupler.

6. In a railway draft rigging a yoke, a piston-like member within said yoke, said member comprising a rear wall for buffing engagement with an associated draft gear, a coupler shank pivotally connected to said member and being in engagement with said rear wall, a pivot pin joining said coupler shank to said member and being rotatable therewith, said pin being vertically disposed when said coupler is in upright position, and means carried by said yoke for supporting said pin when the latter is in vertical position.

7. In a rotary coupler arrangement, a yoke; a coupler having a head and a shank, said shank and said yoke

being in partial telescoped relation; rotating means fixedly secured to the shank and disposed entirely within said yoke, said means being guided for axial movement within and relative to said yoke and providing a rotatable connection between said shank and the yoke, and means yieldably resisting movement of said coupler axially of said yoke.

8. In a rotary coupler arrangement, a sill securable to a car body, a striker disposed within the sill and secured thereto adjacent the front end of the sill, a coupler comprising a coupling head and a shank, a draft gear comprising a yoke having straps thereon receiving a spring unit, a front follower disposed within the yoke and engaging the front portion of said spring unit, rear stop lugs on the sill engaging the rear portion of the spring unit, front stop lugs engaging the front face of the follower, arcuate surfaces defined by the yoke adjacent the forwardly facing opening, a rotary collar rotatably received within the yoke and having surfaces thereon complementally arranged relative to the arcuate surfaces of the yoke, said shank being telescoped within said sill, striker, yoke and collar, apertures in collar and shank, and a pin received within said apertures and rotatably connecting the shank to the collar.

9. In a rotary coupler arrangement, a yoke, a coupler

shank in partial telescoped relation with the yoke, rotatable means pivotally secured to the shank and disposed entirely within the yoke, and providing a rotatable connection between the shank and the yoke, and means yieldably resisting movement of said coupler shank longitudinally of the yoke.

10. In a rotary coupler arrangement, a sill securable to a car body, a striker secured to the sill adjacent its front end, a coupler shank, and a yoke, a forward portion of the yoke having inwardly facing arcuate surfaces concentric with respect to an axis aligned lengthwise of the yoke, a collar rotatably received within said forward yoke portion and having surfaces in complementary relatively rotatable relation with said arcuate surfaces, the shank being telescoped within the sill, striker, yoke, and collar, the collar and the shank having apertures in an alignment transverse to said axis, and a pin received within said apertures for connecting the shank to the collar.

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