Feb. 14, 1939. W. M. DWYER 2,147,018

RAILWAY DRAFT RIGGING

Filed April 20, 1936 2 Sheets-Sheet 1

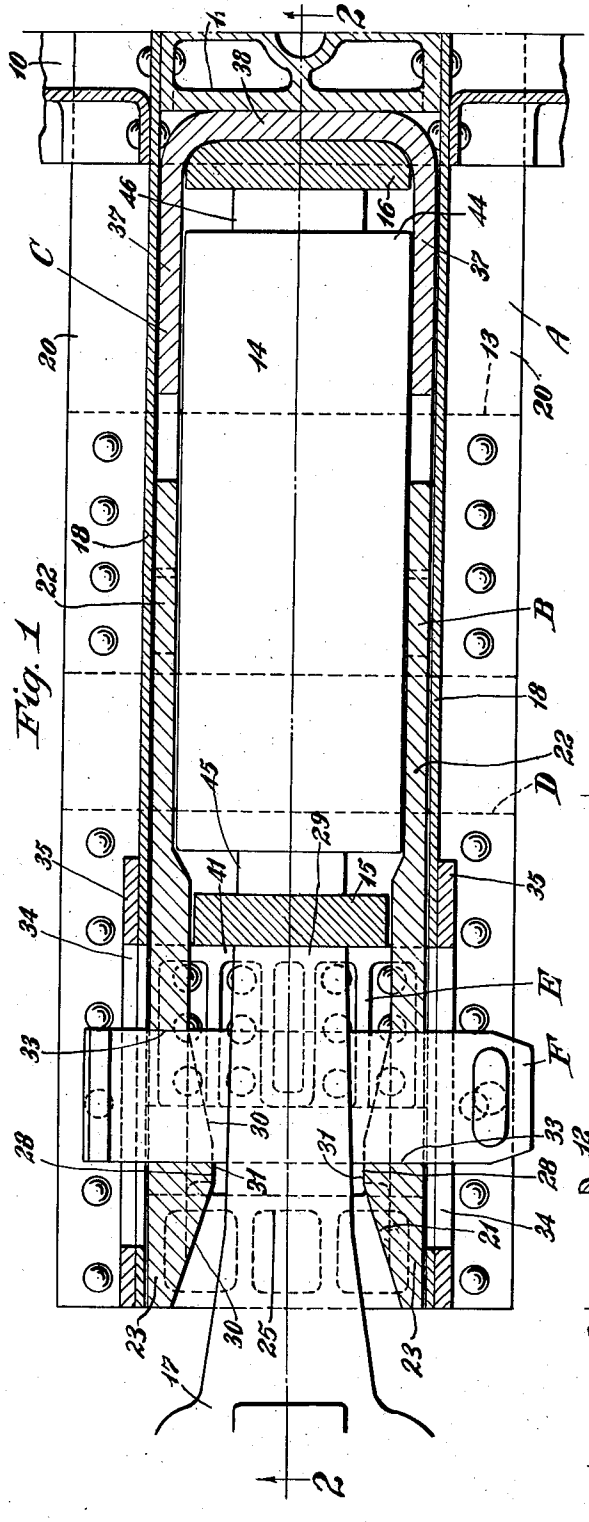


Fig. 1

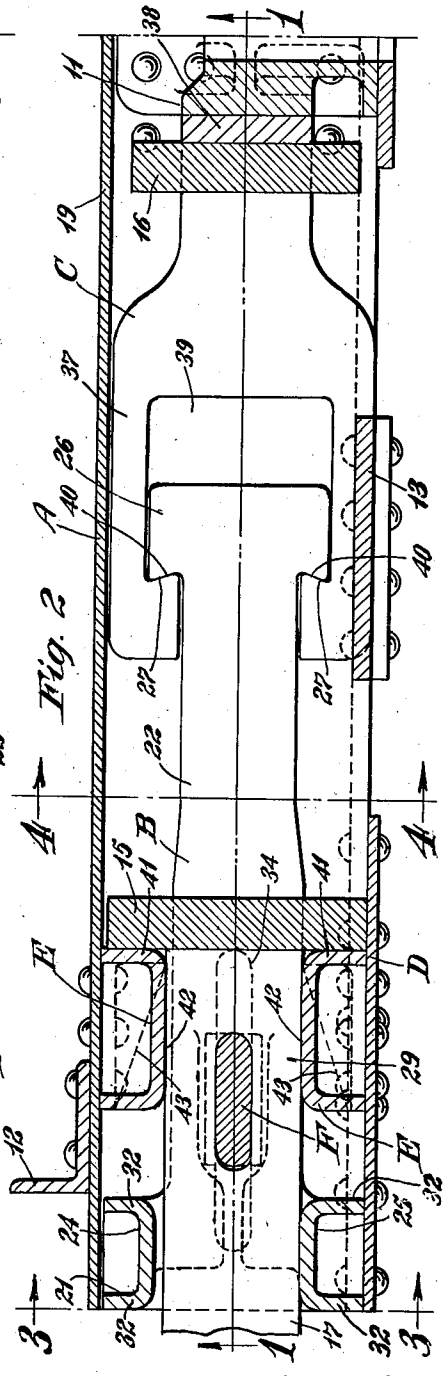


Fig. 2

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Fig. 3

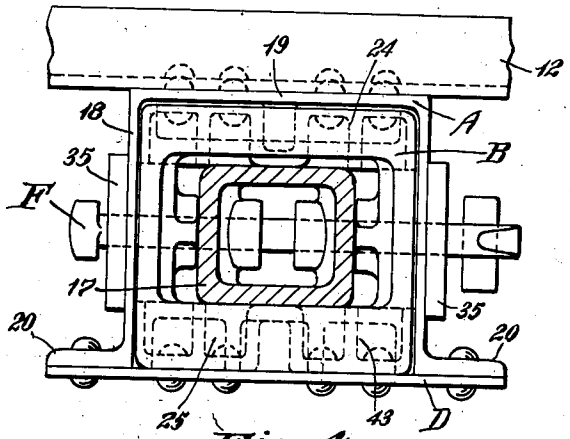
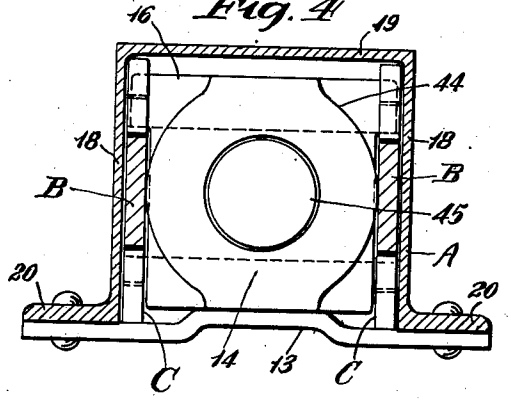


Fig. 4



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RAILWAY DRAFT RIGGING

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10 Claims. (Cl. 213—67)

This invention relates to improvement in railway draft riggings.

One object of the invention is to provide in a railway draft rigging having relatively long travel in both draft and buff, coupler aligning and supporting means movable in unison with the coupler in both draft and buff to effectively support the coupler in the proper position for cooperation with the coupler of an adjacent car.

Another object of the invention is to provide a draft rigging for railway cars including a shock absorbing mechanism of exceptionally high capacity cooperating with the usual standard coupler, wherein the high capacity of the shock absorbing mechanism is obtained by compressing the same in both buff and draft through a distance which is greater than the distance through which the usual shock absorbing mechanism is compressed in standard railway practice, and wherein the coupler is held against drooping by supporting the latter adjacent to the head end at a point which is fixed with respect to said head in all positions of movement of the coupler during both draft and buffing actions of the rigging.

A more specific object of the invention is to provide means in a draft rigging for supporting the coupler in the manner set forth in the preceding paragraph, comprising a supporting element movable in unison with the coupler and a member actuated by said element and movable therewith in draft to transmit the force to the usual shock absorbing mechanism of the draft rigging, wherein movement of the coupler is had with respect to said member to transmit the buffing forces to the shock absorbing mechanism, means in the form of a lost motion connection between said element and member being provided to permit said relative movement.

Other objects of the invention will more clearly appear from the description and claims hereinafter following.

In the drawings forming a part of this specification, Figure 1 is a horizontal, sectional view through the underframe structure at one end of a railway car, illustrating my improvements in connection therewith, the section corresponding substantially to the line 1—1 of Figure 2. Figure 2 is a vertical, sectional view, corresponding substantially to the line 2—2 of Figure 1, with the shock absorbing mechanism omitted. Figures 3 and 4 are transverse, vertical, sectional views, corresponding respectively to the lines 3—3 and 4—4 of Figure 2.

In said drawings, the body bolster at one end of the car is designated by 10 and is provided with the usual combined filler and stop casting 11, which is mounted thereon. The angle end sill of the car is indicated by 12. A saddle plate 13 serves to support the shock absorbing mechanism 14 of the railway draft rigging. The shock absorbing mechanism illustrated is of a well-known friction type and cooperates with front and rear followers 15 and 16, but has longer travel than the standard type of shock absorbing mechanism generally employed.

A standard coupler 17, which is shown partly broken away, cooperates with the shock absorbing mechanism 14 to compress the same in both buff and draft.

In carrying out my invention, I employ broadly a center or draft sill structure A; a sliding coupler supporting member B telescoped within the draft sill structure A; a yoke strap C operatively connecting the member B to the shock absorbing mechanism; a carry iron plate D; combined front stops and coupler shank guide members E—E; and a coupler key F connecting the coupler to the sliding supporting member B.

The draft sill structure A, as shown, preferably comprises a pair of sill members of Z-shaped cross section having the top flanges thereof, which extend inwardly toward each other welded together and having the bottom flanges thereof projecting laterally outwardly. The sill structure A extends from end to end of the car and comprises spaced, vertical side walls 18—18 formed by the vertical webs of the Z-members, a horizontal top wall 19 formed by the top flanges of said members, and laterally, outwardly extending, horizontally disposed bottom flanges 20—20 on said walls 18—18 formed by the bottom flanges of said members. The side walls 18—18 form, in effect, spaced center or draft sill members and the top wall 19 is, in effect, a cover plate which overlies the sill members 18—18. The sill structure A is fixed to the body bolster 10 and the filler block 11, in any well-known manner, the filler block 11 being mounted between the side walls 18—18 of the sill structure A, which side walls 18—18, as hereinbefore pointed out, correspond to the usual spaced center or draft sills of the underframe of the car. The end sill 12 and the center sill structure A are secured together, the bottom flange of the end sill 12 being riveted to the top wall 19 of said sill structure A.

As shown most clearly in Figures 1, 2, and 4, the saddle plate 13 and the carry iron plate D are secured to the under sides of the flanges 20—20 of the center or draft sill structure A. Although the spaced sill members formed by the walls 18—18

of the draft sill structure A are disclosed as an integral part of said structure, my invention is not limited to such a construction, and the latter may be employed in connection with the usual spaced center or draft sills of a railway car.

The sliding coupler supporting member B comprises a substantially rectangular sleeve member 21 and rearwardly extending spaced arms 22—22 operatively connecting the member B to the yoke strap C. The sleeve 21 has vertically disposed, spaced side walls 23—23 and horizontal top and bottom walls 24 and 25. The side walls 23—23 merge with the spaced arms 22—22 and are formed integral therewith. Each of the arms 22 is provided with a head 26 at the rear end thereof, for a purpose hereinafter pointed out. The head 26 of each arm 22 is of greater vertical height than the corresponding arm and projects above and below the top and bottom of said arm, as clearly shown in Figure 2. The top and bottom projecting portions of each head 26 present inclined abutment or stop faces 27—27. The forward end portions of the arms 22—22 and the side walls 23—23 of the member B are thicker than the major portions of said arms 22—22, as clearly shown in Figure 1, and said thickened portions are provided with inward enlargements 28—28 which form guide abutments for the shank 29 of the coupler 17. As shown, each enlargement 28 has laterally inclined front and rear surfaces 30—30 merging at adjacent ends with a short flat surface portion 31. Sufficient clearance is provided between the sides of the coupler shank 29 and the abutment surfaces 31—31 of the enlargements 28—28 to permit the required amount of angling of the coupler in service. The top and bottom walls 24 and 25 are respectively inset with respect to the top and bottom edges of the side walls 23—23 of the sleeve 21 of the member B, as clearly shown in Figure 2, and have front and rear, vertically disposed, transverse reenforcing flanges 32—32 which terminate flush with the top and bottom edges of said side walls. The wall 25 and the flanges 32—32 thereof may be further reenforced by longitudinally extending webs or ribs, as indicated in dotted lines in Figures 1 and 3. The top and bottom walls 24 and 25 are vertically spaced apart to accommodate the shank 29 of the coupler 17 therebetween, only slight necessary clearance being provided between the top of the coupler shank 29 and the top wall 24.

The coupler 17 is operatively connected to the sliding member B by means of a coupler key F which extends through the coupler shank 29, openings 33—33 provided in the member B and guide slots 34—34 in the sill members 18—18. As shown in Figure 1, the openings 33—33 are of such a size that the coupler key snugly fits therein. The slots 34—34 of the sill members 18—18 are of such a length as to permit movement of the coupler key F to an extent to allow the necessary inward and outward movement of the coupler 17 to effect full compression of the shock absorbing mechanism 14 in both buff and draft. As shown, the slots 34—34 of the sill members 18—18 are reenforced by slotted cheek plates 35—35 secured to the outer sides of the walls or sill members 18—18 of the sill structure A.

The carry iron plate member D, which is secured to the side walls 18—18 underneath the sill structure A, serves to slidingly support the sleeve portion 21 of the sliding supporting member B. As shown most clearly in Figures 1 and 2, the plate D extends rearwardly a sufficient distance to slidingly support the front follower 15 in all positions of its movement.

The yoke strap member C is of generally U-shaped form and has spaced side arms 37—37 connected by a transverse rear end sectiton 38. The forward end portion of each arm 37 is vertically enlarged, as shown most clearly in Figure 2, and is provided with a longitudinal guideway or opening 39 therein, adapted to slidingly accommodate the head 26 of the corresponding arm 22 of the member B. At the forward end, the guide opening 39 is contracted, as shown, thereby presenting interior top and bottom shoulders 40—40, which are inclined correspondingly to the shoulders 27—27 of the head 26 and cooperate with the latter to limit outward movement of the head with respect to the yoke strap C. As will be evident, the heads 26—26 of the arms 22—22 of the movable member B serve to operatively connect the latter to the yoke strap C, so that the latter will be pulled outwardly by the member B in draft, due to engagement between the shoulders 27—27 and 27—27 of the heads with the shoulders 40—40 and 40—40 of the strap C. The enlarged portions of the openings 39—39, in which the heads 26—26 of the arms 22—22 of the member B are slidable, are of such a length as to permit full compression of the shock absorbing mechanism in buff. The yoke strap C is supported for sliding movement by the saddle plate 13. As will be evident, the coupler supporting member B, together with the yoke strap C, form, in effect, yoke means for operatively connecting the coupler to the shock absorbing mechanism in draft, and the sliding lost motion connection between the member B and the strap C permits of the necessary movement between the members B and C so that the supporting member B may move inwardly in unison with the coupler during buff, the relative movement permitted between the members B and C being sufficient to allow movement of the coupler to an extent to effect full compression of the shock absorbing mechanism.

The combined front stops and coupler shank guide members E—E are in the form of castings respectively secured to the underneath side of the wall 19 of the member B and the top of the carry iron plate D. As shown, the castings E—E are in vertical alignment. Each casting E comprises a platelike portion having a transversely extending, vertically disposed rear wall or flange 41 forming an abutment face for the front follower 15 of the draft rigging, to limit forward movement of said follower. The flanges 41—41 of the top and bottom castings E—E are in vertical alignment to cooperate with the top and bottom portions of the front follower 15 in the manner of the usual front stop lugs. The top and bottom castings E—E are formed respectively with the depressed and raised central guide portions 42—42 extending lengthwise of said castings and present opposed flat top and bottom guide faces which embrace the rear portion of the coupler shank 29 to guide the same for longitudinal movement. At opposite sides of the guide portion 42, the plate section and flange 41 are reenforced by a plurality of longitudinally extending ribs or webs 43—43 and 43—43, which may be inclined as indicated in Figure 2.

As clearly shown in the drawings, the sleeve member 21 of the sliding coupler supporting member B is of such dimensions that it slidingly fits between the side walls 18—18 of the sill structure A and also slidingly fits between the carry iron plate D and the top wall 19 of the sill structure A,

and is thus positively held against both lateral and vertical displacement. It will be further seen that the yoke strap C and the portion defined by the arms 22—22 of said sliding coupler supporting member B are of such a width as to slidingly fit between the side walls 18—18 of said sill structure A. These members are thus guided between said walls and positively held against lateral displacement. The sliding coupler supporting member B, together with the strap C, form, in effect, a sliding telescoped section of the draft sill or underframe structure of the car.

In Figures 1 and 2 of the drawings, the parts of the draft rigging are shown in normal position and it will be seen that the guide portions 42—42 of the combined front stops and guide members E—E are of such an extent in length that they will overhang the butt end of the coupler shank 29 when the coupler 17 is pulled outwardly to its limit in draft. In other words, the rear end of the coupler shank is embraced and guided between the members E—E in all positions of movement of the coupler during both draft and buffing actions of the rigging.

The friction shock absorbing mechanism 14, herein illustrated, forms a part of the present invention only insofar as it cooperates with the other parts of the draft rigging to absorb draft and buffing shocks, and therefore needs no detailed description, and any other type of mechanism capable of being compressed to absorb draft and buffing shocks may be employed in its stead. However, it might be briefly pointed out that the friction shock absorbing mechanism 14, herein illustrated, is of a well-known type, comprising a friction shell 44 containing the usual cooperating friction shoes and spring resistance means, not shown; an inwardly movable wedge block 45 at the front end of the shell for wedging the shoes apart and forcing them inwardly of the shell; and an inwardly movable spring cap 46 at the rear end of the shell.

As is clear from the disclosure in the drawings, the friction shock absorbing mechanism 14, as well as the front and rear followers 15 and 16, are disposed within the yoke means formed by the members B and C, said shock absorbing mechanism being interposed between the followers and having the wedge 45 and the spring cap 46 thereof bearing respectively on said front and rear followers 15 and 16.

In the operation of my improved draft rigging, upon a pulling or draft force being applied to the coupler 17, the sliding coupler supporting member B will be pulled outwardly through means of the keyed connection of the coupler with said member, thereby pulling the yoke strap C outwardly therewith and also the rear follower 16 which is engaged by the transverse section 38 of said yoke strap. The friction shock absorbing mechanism 14 is thus compressed against the front follower 15 which, at this time, is held stationary by engagement with the front stop members E—E. The slots 34—34 of the sill members 18—18 are of sufficient length to permit full compression of the shock absorbing mechanism 14, compression of the latter being limited by engagement of the front and rear followers 15 and 16 with opposite ends of the friction shell 44.

In buffing action of the railway draft rigging, the coupler 17 is forced inwardly carrying the sliding coupler supporting member B rearwardly therewith, while the yoke strap C is held stationary by engagement with the stop casting 11. The coupler thus forces the front follower 15 rearwardly and compresses the friction shock absorbing mechanism against the rear follower 16 which, at this time, is held stationary by the combined stop and filler casting 11 and the interposed rear end section 38 of the yoke strap C. The required relative movement of the coupler and the sliding coupler supporting member B with respect to the yoke strap C is permitted by the sliding connection between these parts.

I have herein shown and described what I now consider the preferred manner of carrying out my invention, but the same is merely illustrative and I contemplate all changes and modifications that come within the scope of the claims appended hereto.

I claim:

1. In a railway draft rigging, the combination with the underframe structure of a car; of a coupler; an inwardly and outwardly movable coupler supporting member operatively connected to the coupler for movement in unison therewith in both buff and draft; a boxlike guide section at the outer end of said supporting member, said section having opposed top and bottom and opposed side walls, said bottom wall serving as a shelf to support the coupler shank; opposed top and bottom and opposed side walls on said underframe structure at the outer end thereof within which said boxlike section is telescoped for confining said member to movement in a horizontal plane and holding said member against lateral and vertical movement with respect to said under frame structure; a yoke strap having a lost motion connection with said member, said strap being movable with the coupler in draft and being held against movement in buff; and shock absorbing means actuated by inward movement of said coupler and outward movement of said yoke strap.

2. In a railway draft rigging, the combination with a coupler; of a yoke strap; an underframe structure including relatively fixed and movable members including telescopically engaged sections holding said movable member against lateral and vertical displacement with respect to said fixed member to confine said movable member to straight line movement in a horizontal plane; a coupler key inwardly of said telescopically engaged sections operatively connecting said movable member to the coupler for movement in unison with the coupler in both buff and draft, said telescopically engaged section of said member including a bottom wall forming a shelf for supporting the coupler in horizontal position; a lost motion connection between said member and yoke strap; and shock absorbing means within the yoke strap; and shock absorbing means within the yoke actuated by inward movement of the coupler and outward movement of the yoke.

3. In a railway draft rigging, the combination with the underframe structure of a car; of a coupler having a shank; an outwardly movable coupler supporting member; a key operatively connecting the coupler shank to said supporting member; a yoke strap having a lost motion connection with said member; fixed top and bottom guide means on said underframe structure between which the coupler shank is guided for horizontal movement; guide means on the underframe structure of the car forwardly of the keyed connection of the coupler for holding said supporting member against displacement in both vertical and lateral directions and thereby confining said supporting member to movement in a horizontal plane; and shock absorbing means

actuated by inward movement of said coupler and by outward movement of said yoke strap.

4. In a railway draft rigging, the combination with laterally spaced, longitudinally extending draft sill members; of a coupler; a combined coupler supporting and aligning member bearing at opposite sides on the inner sides of said sills, being thereby guided between said sills for sliding movement and held against lateral displacement with respect to said sills by engagement with the latter; fixed top and bottom guide means cooperating with said supporting and aligning member for holding the same against vertical displacement; fixed top and bottom guides on said sill members for holding the shank of the coupler against vertical displacement; a key operatively connecting said supporting and aligning member to the coupler for movement in unison with the coupler in both buff and draft, said key being connected to said aligning member inwardly of said fixed top and bottom guide means; shock absorbing means actuated by inward movement of said coupler; and means actuated by outward movement of said supporting and aligning member for compressing said shock absorbing mechanism.

5. In a railway draft rigging, the combination with a draft sill structure extending lengthwise of the car including spaced side and spaced top and bottom wall members; of a coupler supporting member including a sleeve and a section extending rearwardly from said sleeve, said sleeve being telescoped within said sill structure, engaged by said spaced side walls and spaced top and bottom walls, and guided for straight line sliding movement between said walls; a coupler having a key connecting with said rearwardly extended section of said supporting member to move the sleeve inwardly in buff and outwardly in draft; means on said sleeve for supporting the coupler in horizontal position; top and bottom fixed guides on said sill structure rearwardly of said sleeve between which the coupler shank is guided for horizontal movement; shock absorbing means actuated by inward movement of the coupler; and means movable outwardly with said sleeve for actuating the shock absorbing mechanism.

6. In a yoke means for railway draft riggings, the combination with a coupler supporting sleeve adapted to be connected to a coupler; rearwardly extending spaced arms on said sleeve; a yoke strap having forwardly extending spaced arms having lost motion connection with said arms of the sleeve.

7. In a yoke means for railway draft riggings, the combination with a yoke strap having spaced arms provided with guide openings; of a coupler supporting sleeve adapted to be connected to a coupler for movement in unison with the latter in both buff and draft, said sleeve having spaced arms having a sliding engagement within the guide openings of said first named arms; and means on said second named arms having shouldered engagement with said first named arms to limit separation of said yoke and sleeve.

8. In a yoke for railway draft riggings, the combination with a member adapted to be connected to a coupler; of rearwardly extending spaced arms on said member; a yoke strap having forwardly extending spaced arms; and means connecting said first and second named arms, comprising enlarged head portions on one of said sets of arms and cooperating guides for said heads on the other set of arms, and means on said last named set of arms having shouldered engagement with said heads for limiting relative longitudinal separation of said member and yoke strap.

9. In a railway draft rigging, the combination with a pair of laterally spaced, longitudinally extending draft sill members; of a rear stop; top and bottom front stops on said sill members; a coupler having the shank thereof slidingly guided between said front stops; a sleeve having arms rearwardly extending therefrom; a yoke strap operatively connected to the arms of said sleeve for movement in unison therewith in draft; a lost motion connection between said arms and yoke strap permitting inward movement of said sleeve with respect to said strap in buff, said sleeve being slidingly guided between said sills and held against lateral movement thereby; guide means for holding said sleeve against vertical movement; a key extending through said arms of the sleeve and the coupler shank, connecting the sleeve and coupler for movement in unison in both buff and draft; means on the sleeve for supporting the coupler shank outwardly of the keyed connection thereof with the sleeve; front and rear followers, said rear follower being engaged by the yoke strap and said front follower having its outward movement limited by said front stops; and a shock absorbing mechanism interposed between said followers.

10. In a railway draft rigging, the combination with a draft sill structure including laterally spaced draft sill members; of a shock absorbing mechanism between said sill members; vertically spaced top and bottom guide members on said sills having stop portions acting as front stops for said shock absorbing mechanism; a coupler having the shank thereof guided between said top and bottom guide members; means operatively connecting the coupler to the shock absorbing mechanism to actuate the latter in draft, said means including a coupler supporting guide sleeve and a yoke strap having a lost motion connection with said sleeve, said sleeve being held against lateral displacement by said sills and said sleeve and yoke strap being guided between said sills for longitudinal movement, said guide sleeve having coupler shank supporting means thereon forwardly of said top and bottom guide members; and guide means forwardly of said guide members for holding said sleeve against vertical displacement.

WILLIAM M. DWYER.

CERTIFICATE OF CORRECTION.

Patent No. 2,147,018. February 14, 1939.

WILLIAM M. DWYER.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, second column, lines 56 and 57, claim 2, strike out the words and semicolon "and shock absorbing means within the yoke strap;" and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 11th day of April, A. D. 1939.

Henry Van Arsdale

(Seal) Acting Commissioner of Patents.