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RAILWAY DRAFT RIGGING

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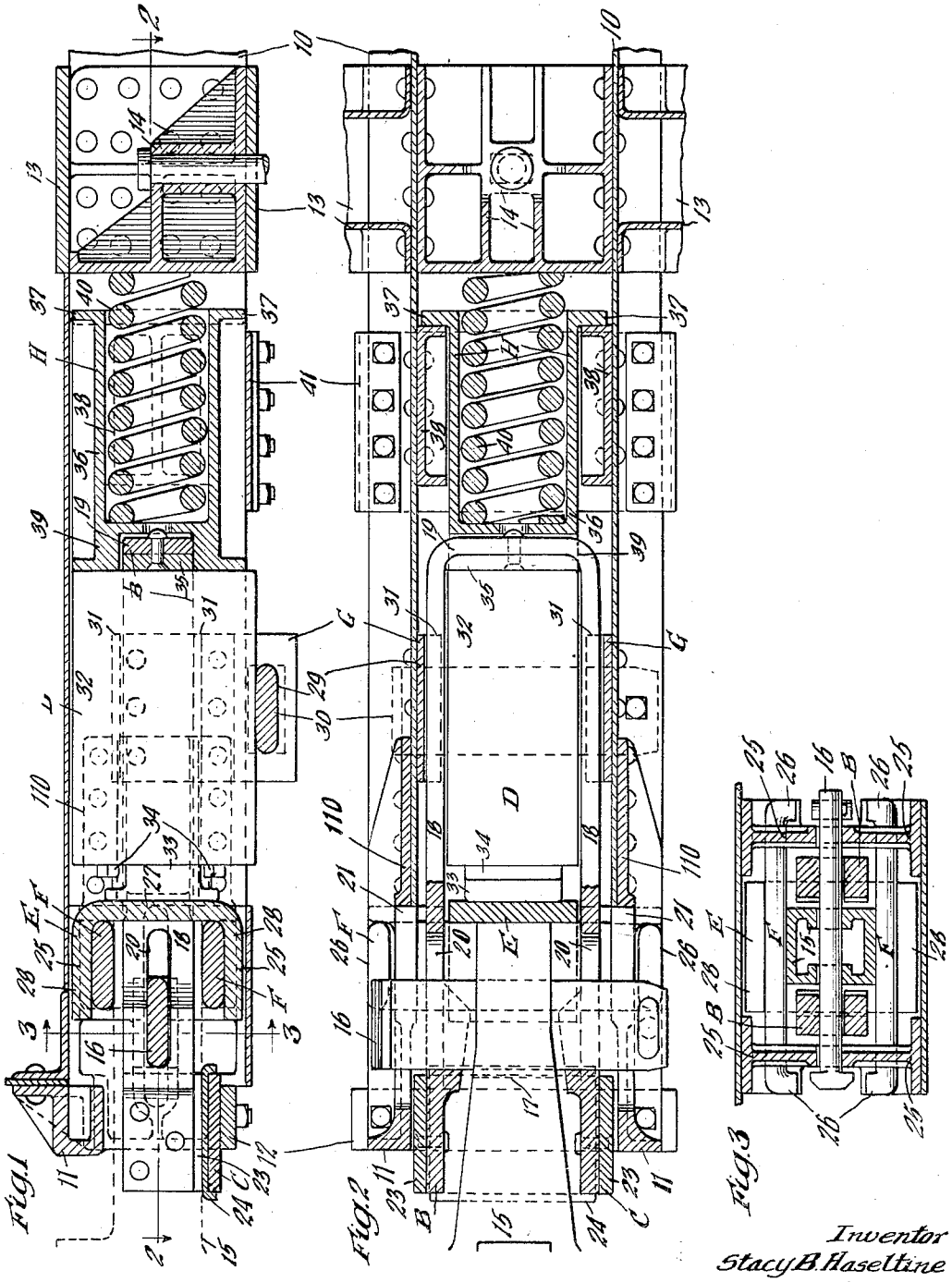

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UNITED STATES PATENT OFFICE

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RAILWAY DRAFT RIGGING

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This invention relates to improvements in railway draft riggings.

In the operation of railway cars, and especially freight cars, a source of constant trouble has been found in the inability to maintain the standard couplers in proper alinement with the shock absorbing devices of the draft rigging, especially where the couplers are used in connection with horizontally disposed U-shaped yokes. Due to the shank of the coupler being connected to the U-shaped yoke by a key remote from the coupler head, the weight of the coupler head causes the same to droop and rock on the carry iron, thereby destroying the alignment of the parts of the draft rigging and shock absorbing means and causing excessive wear and other damage to the carry iron and parts of the draft rigging. Damage is also caused to draft riggings due to the eccentric application of the load when the coupler shank is out of alignment with the shock absorbing device. It is well known to those skilled in this art that there is at present a tendency to increase the drawbar or coupler movement over the normal coupler travel of two and three-quarters inches now employed, especially in buff. The difficulties pointed out obviously become greater when the length of movement of the coupler is increased, due to the necessarily greater overhang of the coupler.

One object of the invention is to provide a simple and relatively inexpensive means for use in connection with a horizontal yoke for supporting the coupler shank, so that it will at all times be maintained in proper axial alignment with the shock absorbing device in all positions of the railway draft rigging, from extreme draft to extreme compression.

Another object of the invention is to provide a supporting means adapted to be attached to the usual horizontal type of yoke for supporting the coupler in such a manner that the overhanging portion of the same will be supported so as to prevent fulcruming about the carry iron of the shaft rigging to avoid drooping or falling of the coupler head, thus maintaining the proper position of the coupler head for effective coupling of cars and the aligned condition between the coupler and shock absorbing mechanism, wherein the supporting means comprises a supporting member for the bottom side of the coupler shank, rigid with the yoke and disposed closely adjacent the coupler head, and retaining members at the inner end of the coupler shank, disposed above and below and closely embracing the same, the retaining elements being anchored to the draft sills in such a manner as to prevent vertical displacement and separation thereof.

Other and further 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 longitudinal, vertical, sectional view of a portion of a railway car underframe structure at one end of the car, illustrating my improvements in connection therewith. Figure 2 is a horizontal, longitudinal, sectional view, corresponding substantially to the line 2—2 of Figure 1. And Figure 3 is a vertical, transverse, sectional view, corresponding substantially to the line 3—3 of Figure 1.

In said drawings, 10—10 indicate the channel-shaped center or draft sills of a railway car underframe. At the end of the car, the striking casting 11 is employed, the same being secured to top portions of draft sill extensions in the form of castings 110, and the striking casting is thereby secured to the draft sills. The usual carry iron is secured to the bottom portion of the castings 110, the same being designated by 12. One of the body bolsters of the car is indicated by 13 and the same is provided with the usual bolster filler casting 14, which is interposed between the draft sills and secured thereto, the bolster filler casting forming a rear abutment member for the shock absorbing mechanism hereinafter more fully described. The coupler which co-operates with the shock absorbing means of the railway draft rigging is indicated by 15 and is provided with the usual coupler key 16, which extends through a slot 17 provided in the coupler shank.

In carrying out my invention, I employ a horizontal yoke member B; a supporting

plate C at the outer end of the same; a shock absorbing mechanism D disposed within the yoke; a U-shaped front follower E; a pair of retaining bars F—F; yoke guide members G—G; and a spring buffer H.

The horizontal yoke B is of the usual type and is of U-shaped form, having spaced, longitudinally disposed, side members 18—18, connected by a transverse end section 19. The yoke member B is connected to the coupler by means of the key 16 which works within aligned slots 20—20, provided at the forward end of the yoke member. The key 16 also extends through key-receiving slots 21—21, provided in the castings 110 which are secured to the draft sills. As shown, the slots 21 are of such a length as to permit a greater amount of inward movement of the key than outward movement thereof. The coupler shank is supported adjacent the coupler head by the supporting plate C, which comprises a horizontal bottom section and upwardly extending side arm members 23—23. The side arm members 23 embrace the front ends of the side members 18 of the yoke and are rigidly secured thereto in any suitable manner. In the present instance, the same are shown as secured by rivets. The plate C, as clearly illustrated in Figure 1, is directly supported on the carry iron 12 and is slidable with respect thereto. A rear plate member 24 is interposed between the supporting plate C and the under side of the coupler shank. The wear plate 24 is preferably provided with flanges at the front and rear ends thereof, which overhang the plate C to lock the same to the supporting plate and prevent displacement relative thereto. The inner end of the coupler shank is held against vertical displacement by the retaining bars or keys F—F. As shown, the keys F—F are disposed respectively above and below the coupler shank and have their opposite ends extending through openings 25—25 provided in the draft sills. As shown, the openings 25 are of greater height than the thickness of the corresponding bars, to permit insertion of the bars, which, as shown in Figure 3, have angularly disposed end sections 26—26.

The angularly disposed end portions 26 serve as retaining means for the bars when the same are in their assembled position. The top walls of the lower openings 25 and the bottom walls of the upper openings 25 are so disposed that the retaining elements, when in abutment with these walls, will be spaced apart a distance substantially the same as the height of the coupler shank. The spacing is such, however, as to permit free, inward, sliding movement of the coupler shank with respect to the bars F. In order to maintain the bars in position and hold the same against separation in a vertical direction, I provide retaining means which is associated with the front follower E of the shock absorbing mechanism. As shown in Figures 1 and 2, the front follower E comprises a vertically disposed main body portion 27, having top and bottom forwardly extending arms 28—28 which are disposed respectively above and below the top and bottom bars F—F and closely embrace the same. The main body portion 27 of the follower E is interposed between the inner end of the shank of the coupler 15 and the shock absorbing mechanism D. As will be evident, the follower E is movable inwardly with the coupler 15 and consequently has sliding movement on the bars F. The arms 28 of the follower are of such a length that they will always overlap the bars F and will not be disengaged therefrom when the coupler is moved to the extreme buffing position. The inner end of the coupler shank will thus always be maintained in proper position by the bars F, relative approach of which in a vertical direction is prevented by the walls of the openings 25 in the draft sills, and relative separation of which is prevented by the engaging arms of the follower E. The inner end of the coupler shank, which is slidingly guided between the bars F, is thus effectively anchored to the draft sills against vertical displacement.

In order to properly guide the movement of the yoke B, I preferably employ the guide members G, which are secured to the inner sides of the draft sills 10. Each guide member G is in the form of a vertically disposed plate, riveted to the web of the corresponding draft sill 10. As shown in Figure 1, the plates G extend an appreciable distance below the draft sills and are provided with aligned key-receiving openings 29—29, which accommodate the opposite ends of a supporting key 30 for the shock absorbing mechanism D. Each plate G is also provided with horizontally disposed, spaced, inwardly projecting top and bottom guide ribs 31—31 which overhang the corresponding side member 18 of the yoke. The ribs are so spaced that the yoke arm 18 is freely guided therebetween, but is held against vertical displacement.

The shock absorbing mechanism D may be of any well known type, and, in the present instance, is illustrated as a friction shock absorbing mechanism. The friction shock absorbing mechanism D comprises the usual friction casing or shell 32 and co-operating friction means, including a wedge member 33 and friction shoes 34—34 which have their inward movement opposed by the usual main spring resistance which is disposed within the friction shell. The wedge block 33 bears directly on the inner side of the front follower E. The rear end of the friction shell of the shock absorbing mechanism D bears on a filler plate 35, which is riveted to the transverse end section 19 of the yoke B. As

clearly shown in Figure 1, the friction shell has the top and bottom portions thereof projecting beyond the yoke B and the inner end of the shell normally bears directly on the spring buffer mechanism H.

The spring buffer mechanism H comprises a casing 36, which is preferably of box-like form and closed at the forward end. As shown in Figure 2, the front end wall of the casing is directly opposed to the end section 19 of the yoke member B. At the inner end, the casing is provided with top, bottom, and side flanges 37—37 which extend laterally outwardly. The side flanges 37 co-operate with stop castings 38—38 which are secured to the draft sills 10, thereby positively limiting the outward movement of the casing 36. The side portions of the casing are forwardly extended to provide relatively short arms 39—39 which straddle the inner end of the yoke B. The front ends of the arms 39 directly engage the inner end of the friction shell of the shock absorbing mechanism D in the normal position of the parts. A spring resistance 40 is disposed within the casing 36 and has the front end thereof bearing on the end wall of the casing. The inner end of the spring engages directly the front wall of the filler casting 14. When the parts are assembled, the spring 40 is placed under considerable initial compression. As shown in Figures 1 and 2, the inner end of the casing 36 is normally spaced from the filler casting 14 to permit a certain amount of compression of the spring resistance 40 before rearward movement of the casing is limited by engagement with the filler casting. The casing 36 is supported by a relatively wide saddle plate 41, which is secured to the bottom flanges of the draft sills, and the friction shell of the shock absorbing mechanism D is supported directly by the key 30.

The operation of my improved mechanism, assuming a pulling or draft action being applied to the coupler 15, is as follows: The key 16 will be pulled outwardly with the coupler, thereby moving the yoke B forwardly and compressing the friction shock absorbing mechanism D between the inner end section 19 of the yoke and the front follower E. The front follower is positively held against outward movement during this action by the retaining bars F, which, as hereinbefore pointed out, are anchored to the draft sills. During this movement, the coupler shank will slide forwardly between the fixed retaining bars F, but as will be evident upon reference to Figures 1 and 2, the outward movement permitted of the coupler shank is not sufficient to disengage the shank from between the retaining bars F. The outward movement of the coupler 15 is limited to the spacing between the front end of the friction shell of the shock absorbing mechanism D and the follower E. In the normal position of the parts, the coupler key is spaced such a distance from the front end walls of the slots in the draft sills as to permit the full compression of the friction shock absorbing mechanism D in draft.

During a buffing action, the coupler 15 will be forced rearwardly, thereby carrying the follower E inwardly also and forcing the friction shock absorbing mechanism D rearwardly. It will be evident that the yoke B will thus be carried inwardly with the shock absorbing mechanism D, and that by engagement of the friction shell of the friction shock absorbing mechanism with the casing of the spring buffer H, the casing will be forced rearwardly, thereby compressing the spring 40 against the bolster filler block casting. During the compression of the spring 40, there will be only slight compression of the friction shock absorbing mechanism D. Rearward movement of the casing 36 is limited by engagement with the bolster filler casting, whereupon the casing acts as a solid column resisting the movement of the friction shell of the shock absorbing mechanism D. Upon movement of the shell being arrested, the friction shock absorbing mechanism will be compressed by the further inward movement of the coupler and the follower E. The compression of the friction shock absorbing mechanism D will be limited by engagement of the follower E with the front end of the friction shell. It will be evident that the full compression stroke of the mechanism is equal to the amount of movement permitted between the casing 36 and the bolster filler casting 14, plus the amount of movement between the follower E and the friction shell of the shock absorbing mechanism D. It follows that the movement in buff of the shock absorbing mechanism is greater than that in draft, the movement of the casing 36 with respect to the bolster filler block being added to the relative movement between the follower and the shell of the friction shock absorbing mechanism.

From the preceding description, taken in connection with the drawings, it will be evident that the supporting plate C, which is rigidly attached to the front ends of the side members of the yoke B, forms an effective support for the coupler shank adjacent the head or horn of the coupler, and that the inner end of the shank of the coupler is effectively supported against vertical displacement by the top and bottom retaining bars F which are anchored to the draft sills against vertical movement through the medium of the interlocking follower E. It will further be evident that the weight of the coupler head is balanced by the yoke B, which is guided in its longitudinal movements between the ribs 31 of the guide members G which are fixed with respect to the draft sills. The objectional tilting or rocking

movement of the coupler is thus entirely eliminated.

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

I claim:

1. In a draft rigging for railway cars, the combination with draft sills and a coupler; of a yoke enclosing a shock absorbing means, said yoke and coupler having a lost motion connection; a supporting member for the coupler shank secured to the outer end of the yoke and engaging the under side of the coupler shank adjacent the front end thereof outwardly of the connection with the yoke; retaining and guiding bars anchored to the sills, disposed above and below the coupler shank at the rear end portion thereof inwardly of the connection with the yoke and closely embracing the shank and overlapping the same in all operative positions thereof; and means embracing said bars from above and below for preventing vertical separation of said bars.

2. In a draft rigging for railway cars, the combination with draft sills and a coupler; of a horizontal yoke enclosing a shock absorbing mechanism, said yoke having side arms having a key connection with the coupler shank; a supporting member for the coupler shank secured to the outer ends of the yoke arms and engaging the under side of the coupler shank forwardly of the key connection thereof with the yoke; retaining bars anchored to the sills, disposed above and below the coupler shank at the rear end portion thereof and closely embracing said shank; a front follower within the yoke, cooperating with the shock absorbing means, said front follower having means engaging above and below the retaining bars to prevent vertical separation of the same.

3. In a draft rigging for railway cars, the combination with draft sills and a coupler; of a horizontal yoke keyed to said coupler, said coupler having a longer stroke in buff than in draft; a supporting plate member secured to the outer end of the yoke engaging beneath the coupler shank near the outer end thereof to support the same; bars extending through slots in the draft sills and disposed above and below the rear end portion of the coupler shank, in engagement therewith to guide the same, said bars being held in separated position by the adjacent walls of the slots; and a U-shaped front follower within the yoke, having the arms thereof closely embracing the bars and preventing vertical separation thereof.

4. In a draft rigging for railway cars, the combination with draft sills and a coupler; of a horizontal U-shaped yoke member having the side arms thereof at the open end of the U provided with aligned coupler key receiving slots; a coupler key extending through the coupler shank and said yoke slots; supporting means carried by the outer end of the yoke member fixed to said side arms and engaging the under side of the coupler shank outwardly of said key connection; and guide means anchored to the draft sills, overlapping the rear end portion of the coupler shank in all operative positions of the latter and embracing the top and bottom sides thereof for preventing vertical displacement of the same.

In witness that I claim the foregoing I have hereunto subscribed my name this 12th day of April, 1928.

STACY B. HASELTINE.

CERTIFICATE OF CORRECTION.

Patent No. 1,859,699. May 24, 1932.

STACY B. HASELTINE.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 4, line 45, claim 2, after the word "same" insert a comma and the words said retaining bars forming front stops for said follower; 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 12th day of July, A. D. 1932.

M. J. Moore,
Acting Commissioner of Patents.

(Seal)