April 28, 1936. D. S. BARROWS 2,039,269

DRAFT RIGGING

Filed June 27, 1930 3 Sheets-Sheet 1

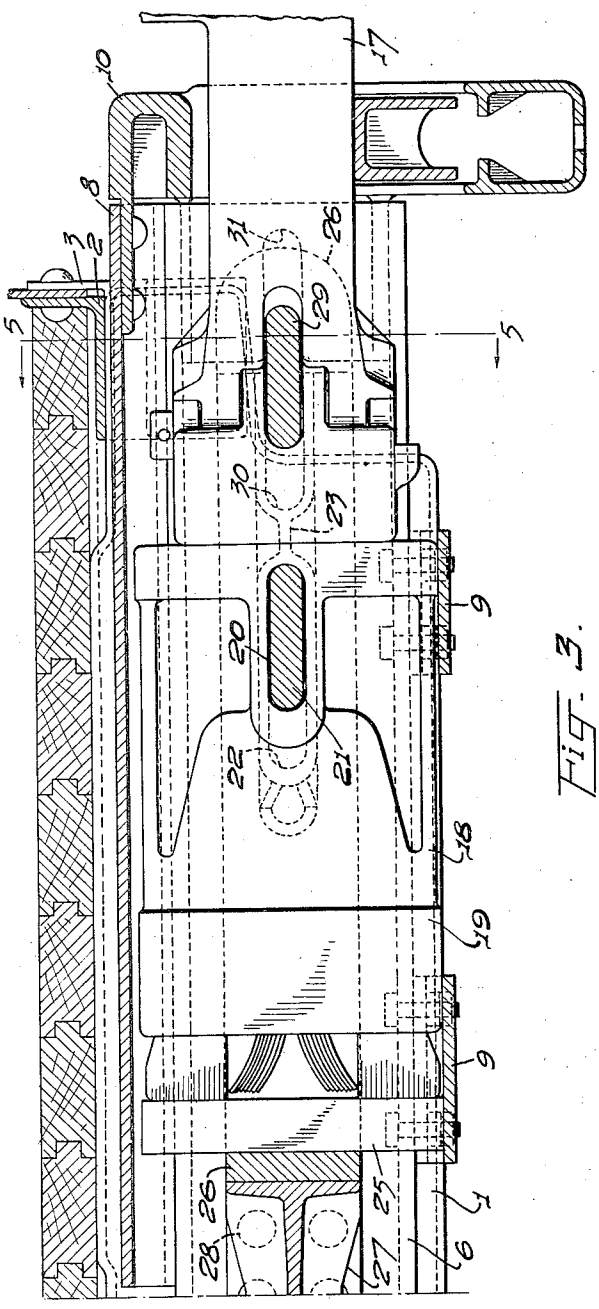


Fig. 1.

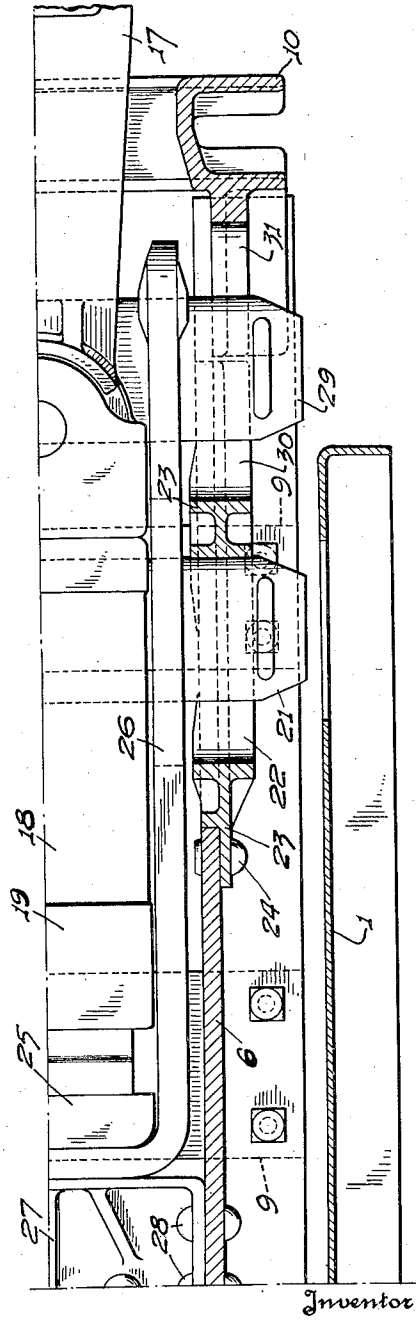


Fig. 3.

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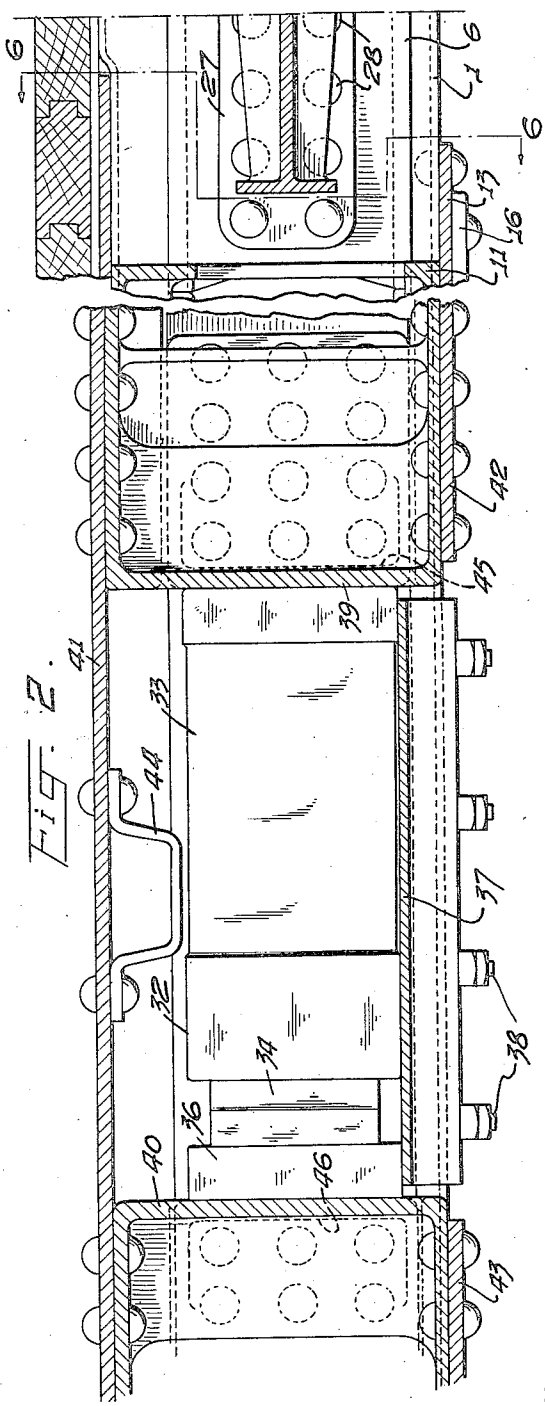


Fig. 2.

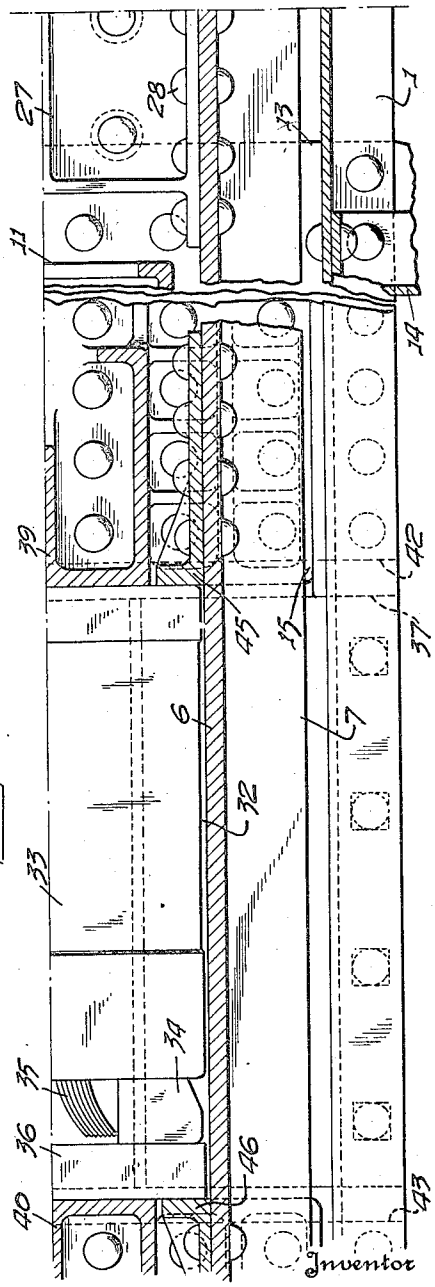


Fig. 4.

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Fig. 5.

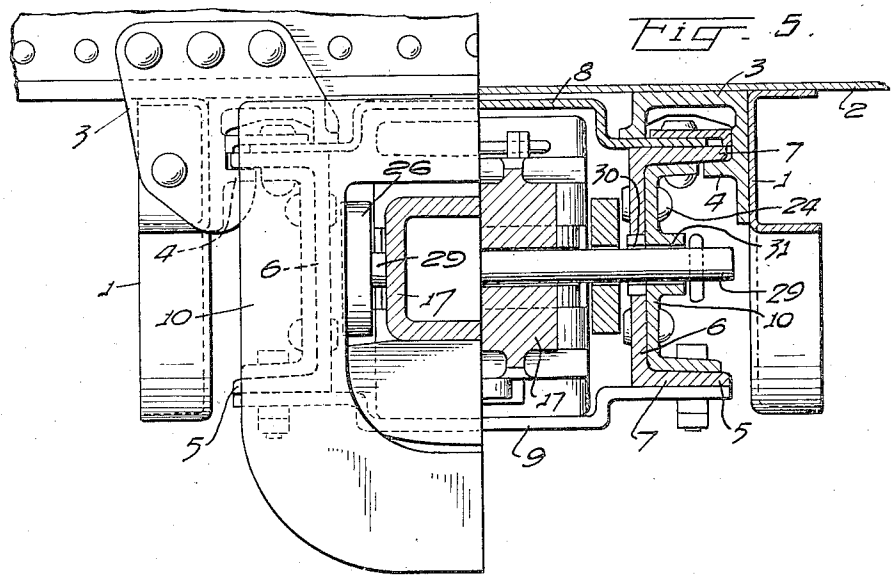
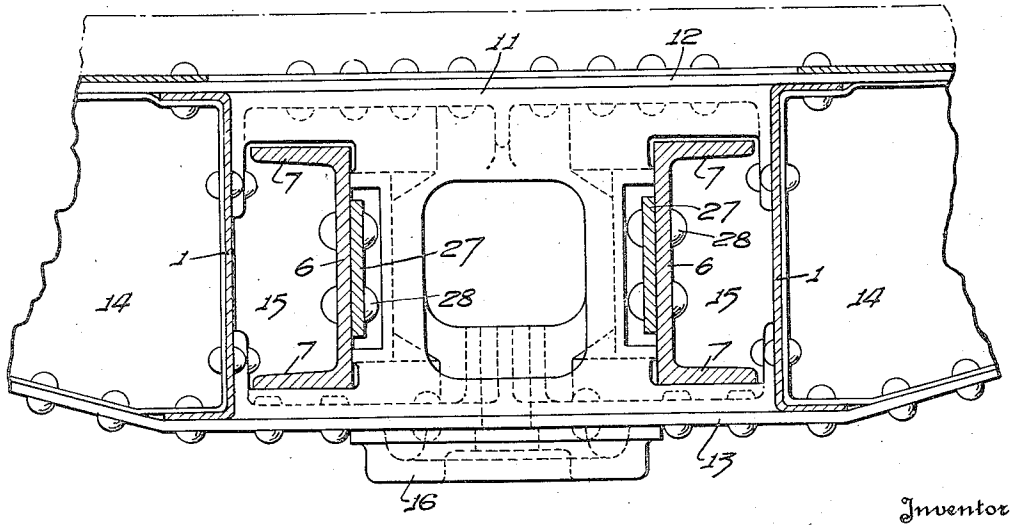


Fig. 6.



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2,039,269

UNITED STATES PATENT OFFICE

2,039,269

DRAFT RIGGING

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Application June 27, 1930, Serial No. 464,286

11 Claims. (Cl. 213—8)

This invention relates to railway draft rigging, and more particularly to such in which draft sills are adapted for limited movement with respect to the remainder of the underframe.

The principal object of my invention, generally considered, is the provision of a railway vehicle underframe and associated draft rigging in which cushioning mechanism is mounted between sills, movable with respect to the underframe, for cushioning relative movement of the associated coupler or drawbar with respect to said sills, and other cushioning mechanism is also mounted between said sills for cushioning movement thereof with respect to the remainder of the underframe.

Another object of my invention is the provision of a railway vehicle underframe in which the draft sills extend from one end to the other and are mounted for limited movement with respect thereto, cushioning mechanism embraced by a yoke connected to an associated coupler being employed for cushioning relative movement of the coupler with respect to said movable sills, and other cushioning mechanism being mounted between said movable sills in engagement with draft lugs thereon and stressed upon relative movement of said sills by engagement with stop means fixed with respect to the underframe.

A further objeect of my invention is the provision of a railway vehicle underframe involving relatively fixed sills, and sills mounted therebetween and slidable longitudinally with respect to said fixed sills, said fixed sills being connected by cross members supporting said movable sills and providing stop means for engaging and stressing cushioning mechanism mounted between said movable sills upon relative movement of the latter with respect to said fixed sills, said movable sills also carrying other cushioning mechanism preferably key connected thereto and to a yoke and connnected drawbar whereby relative movement between the drawbar and the movable sills is also cushioned.

A still further object of my invention is the provision of a railway vehicle underframe with movable draft sills between which at each end are mounted cushioning mechanism connected to associated couplers, said sills also carrying cushioning mechanism intermediate the end cushioning mechanism, whereby not only is movement of each coupler with respect to the movable sills cushioned, but movement of the movable sills with respect to the underframe is likewise cushioned, the mechanism being so connected to the sills and underframe that under both the action of draft and buffing forces, the intermediate cushioning mechanism cooperates with at least one of the end cushioning mechanisms for shock absorbing purposes.

Other objects and advantages of the invention relating to the particular arrangement and construction of the various parts will become apparent as the description proceeds.

Referring to the drawings illustrating my invention, the scope whereof is defined by the appended claims:—

Figure 1 is a fragmentary, vertical, longitudinal sectional view of a railway vehicle underframe illustrating one embodiment of my invention, the associated cushioning mechanism and some of the associated rigging being shown in side elevation.

Fig. 2 is a fragmentary, vertical, longitudinal sectional view of a railway vehicle underframe supplementary to the view shown in Fig. 1, so as to illustrate that portion of the underframe immediately adjacent and rearward of the part shown in Fig. 1.

Fig. 3 is a fragmentary plan of the underframe and mechanism shown in Fig. 1 with parts thereof in horizontal section.

Fig. 4 is a fragmentary plan of the underframe and mechanism shown in Fig. 2 with parts thereof in horizontal section.

Fig. 5 is a partial end elevation and partial transverse sectional view on the line 5—5 of Fig. 1, looking in the direction of the arrows.

Fig. 6 is a transverse sectional view on the line 6—6 of Fig. 2, looking in the direction of the arrows.

Referring to the drawings in detail, like parts being designated by like reference characters, there is illustrated as one embodiment of my invention a portion of a railway vehicle underframe involving longitudinal framing or relatively fixed sills 1 connected by end sills 2, only one of which is illustrated. The sills 1 and 2 preferably have connected adjacent the intersections thereof bracket castings 3 with inwardly extending flange or ledge portions 4 upon which are movably or slidably mounted the draft or movable center sill assembly 5 involving longitudinal draft sills 6.

In the present embodiment, the draft sills 6 are formed as channels with outwardly extending flanges 7, the upper of which rest directly on the flange or ledge portions 4 of the bracket castings 3, whereby relative movement therebetween develops friction at the engaging surfaces. The sills 6 are preferably connected by top cover plates 8, only one of which is shown, and carry irons 9

which at each end underlie the associated cushioning mechanism. The ends of the sills 6 preferably have applied thereto combined striking castings and sill tie members 10.

Connecting the sills 1 intermediate the ends thereof are bolster center filler castings 11 disposed between the bolster cover plates 12 and 13 and the bolster transoms 14 which extend outwardly from the framing sills 1. The center filler castings are apertured, as indicated at 15, for the passage of the movable draft sills 6, the lower flanges of which desirably rest on those portions of the center filler castings 11 which define the bottoms of the openings 15, it being understood that friction is developed upon relative movement between the movable sills 6 and the castings 11. A center plate 16 may be connected to the bottom bolster cover plate 13 beneath the center filler casting 11, as is usual.

For cushioning relative movement of the coupler or drawbar 17 with respect to the movable sills 6, there is disposed rearwardly of said drawbar, it being understood that only one end of the vehicle is shown, and the construction is duplicated at the other end, the cushioning mechanism 18, in the present embodiment comprising a friction draft gear having a housing or casing 19 slotted at 20 for receiving a draft key 21 for connection with the movable sills 6 as by having the ends thereof received in slots 22 in cheek plates 23 connected to said sills 6, as by means of rivets 24. The fixed sills 1 are slotted as illustrated in Fig. 3 to provide for application and removal of the key 21. The housing 19 is shown open at one end for receiving the friction elements which may be of known form and comprise friction wedges with inclined surfaces engaging correspondingly inclined surfaces on the housing and held in frictional engagement therewith by resilient means which may take the form of curved plate springs. The ends of the wedges which extend out of the casting 19 are desirably engaged by a follower 25 embraced by an associated yoke 26 which normally abuts a back stop 27 connected to the movable sills 6 as by means of rivets 28. The arms of the yoke 26 are correspondingly slotted to receive the connecting draft key 21 and forwardly or outwardly thereof have additional slots receiving a front draft key 29 which serves for connection with the associated coupler or draw-bar 17, the ends of said key being received in corresponding slots or notches 30 in the cheek plates 23, which, in the present embodiment, are completed by correspondingly notched or slotted portions 31 in the side walls or webs of the combined striking casting and sill tie member 10. Although the coupler 17 is shown as of the swivel butt type, such as described and claimed in my prior Patent No. 1,431,717, of October 10, 1922, I do not wish to be limited to this showing.

The slots 22 in the cheek plates 23 are continued rearward of the normal position of the rear edge of the key 21 to permit the key 21 to move rearwardly an amount sufficient to fully compress the gear 18; likewise the composite slots 30—31 are extended forwardly and rearwardly of the adjacent edges of the key 29 when in normal position an amount sufficient to permit full compression of the gear 18 when the drawbar is subjected to either draft or buffing forces. It will be seen that under the action of draft forces, the housing 19 is held by the key 21 and the yoke pulls the rear follower 25 forwardly to compress the gear, while under the action of buffing forces, the housing 19 is pushed rearwardly over the friction elements which are held in position by the rear follower 25 abutting the yoke 26 and back stop 27. This arrangement provides for cushioning relative movement between the coupler and movable sills 6.

In order to provide for cushioning movement of the movable sills 6 with respect to the fixed sills 1, additional cushioning mechanism 32, which, in the present embodiment, is illustrated as a friction draft gear with a housing 33 receiving friction element 34 separated by curved plate springs 35 like in the gear 18, is provided. A follower 36 is preferably employed in engagement with the outer or butt ends of the friction elements 34. The draft gear and associated parts just described is supported by a carrier plate 37 extending between the lower flanges of the fixed sills 1 and desirably connected thereto by bolts or the like 38. The ends of the assembled mechanism are engaged by filler castings 39 and 40 desirably supported between a top cover plate 41 connecting the top flanges of the fixed sills 1 and bottom cover plates 42 and 43 connecting the bottom flanges of the fixed sills 1 and extending below the castings 39 and 40, respectively. A top abutment member 44 may be connected to the lower face of the cover plate 41 and overlie the housing 33 to hold the gear in proper position.

In order to provide for stressing the gear 32 upon relative movement of the sills 6, said sills are provided with front draft lugs 45 and rear draft lugs 46, the former of which are received in side pockets in the filler casting 39, and desirably have abutment faces normally coplanar with the housing-engaging abutment face of the casting 39, and the latter of which are received in the side pockets in the filler casting 40, and desirably have abutment faces normally coplanar with the housing-engaging abutment face of the casting 40, normal clearance for relative movement therebetween being provided. It will thus be seen that upon relative rearward movement of the sills 6 with respect to the sills 1 and vehicle underframe, the front lugs 45 engage the housing 33 and push it over the friction wedges 34 held stationary by the follower 36 abutting the filler casting 40. Upon relative forward movement of the movable sills 6, the rear draft lugs 46 engage the follower 36 and push the wedge blocks 34 into the housing 33 held stationary by the filler casting 39.

From the foregoing disclosure, it will be seen that I have devised a railway vehicle underframe and associated cushioning mechanism and draft rigging so arranged that under the action of both draft and buffing forces relative movement of the coupler with respect to the movable sills is cushioned by the adjacent draft gear, while the intermediate draft gear serves to cushion relative movement of the movable sills with respect to the fixed sills or vehicle underframe.

Although the mechanism at one end of the vehicle only is illustrated, it will be understood that each coupler desirably has corresponding cushioning mechanism connected thereto by means of a corresponding yoke.

Although only one draft gear 32 for cushioning relative movement between the movable and fixed sills is illustrated, it will be understood that, if desired, I may employ an intermediate gear for this purpose disposed inwardly of each end or coupler connected gear. By utilizing the mechanism at the ends of the movable sills to cushion relative movement of the coupler with respect thereto, the train slack is kept as low as

possible, while at the same time the vehicle lading is amply protected by having extra cushioning effect added upon relative movement of the movable sills besides the frictional capacity developed by such movement.

Although a preferred embodiment of my invention has been illustrated, it will be understood that modifications may be made within the spirit and scope of the appended claims.

I claim:

1. In railway draft rigging, relatively fixed sills, draft sills disposed between said fixed sills and longitudinally movable with respect thereto, cushioning mechanism disposed between said movable sills, means connecting said fixed sills and extending above and below the movable sills, means joining said connecting means and providing abutment faces engaging the ends of said cushioning mechanism, and draft lugs on said movable sills, with abutment faces normally coplanar with the first-mentioned abutment faces, and also engaging the ends of said cushioning mechanism, whereby the mechanism cushions relative movement between said movable and fixed sills.

2. In railway draft rigging, relatively fixed sills, draft sills disposed between said fixed sills and longitudinally movable with respect thereto, plates connected to said fixed sills and overlying and underlying said movable sills, cushioning mechanism mounted between said movable sills, stop means connected to said plates, extending from one to the other, and normally engaging the ends of said cushioning mechanism, and lugs connected to said movable sills and normally engaging the ends of said cushioning mechanism whereby said mechanism is stressed upon movement of said movable sills in either direction with respect to the fixed sills.

3. In a railway vehicle underframe, longitudinal members connected at their ends by end sills and intermediate their ends by cover plates and stop castings, draft sills disposed between said longitudinal members and disposed between said cover plates, brackets on the ends of said longitudinal members supporting the ends of said draft sills, back stops connecting intermediate portions of said draft sills, striking castings connecting the ends of said draft sills, drawbars and connected yokes mounted between said draft sills, cushioning mechanism embraced by each yoke and normally abutting the rear end of the associated drawbar and the corresponding yoke normally abutting a back stop whereby relative movement between either drawbar and the draft sills is cushioned.

4. In a railway vehicle underframe, longitudinal members connected by end sills and cover plates, brackets bracing the connection between said members and end sills, draft sills disposed between said longitudinal members, supported adjacent their ends by said brackets and disposed between said cover plates, a back stop connecting intermediate portions of said draft sills, a striking casting connecting adjacent ends of said draft sills, a drawbar and connected yoke mounted between said sills forwardly of said back stop with the drawbar embraced by said striking casting, cushioning mechanism embraced by said yoke and normally abutting the drawbar, said yoke normally abutting the back stop and the mechanism so connected that relative movement between said drawbar and draft sills is cushioned.

5. In a railway vehicle, an underframe comprising longitudinal and transverse members, said transverse members being apertured between said longitudinal members, sills extending through said apertures and slidably supported on said transverse members for longitudinal movement with respect to said underframe, a cushioning unit supported between said sills on a carrier plate secured to said longitudinal underframe members, means connecting said longitudinal members and having portions between said sills normally engaging opposite ends of said cushioning unit to serve as stops, and lugs connected to said movable sills and normally engaging opposite ends of said cushioning unit for the actuation thereof upon movement of said sills with respect to said underframe.

6. In railway draft rigging, in combination with longitudinal members and connecting transverse members of a railway vehicle underframe, longitudinal sills movably mounted with respect to said members, cushioning mechanism disposed between said sills, some of said transverse members having abutment portions being vertically spaced, means disposed between said sills, connecting said vertically spaced members, and acting as stop means for engagement with the ends of said cushioning mechanism, and lugs on the movable sills engaging the ends of said cushioning mechanism for stressing it upon movement of said sills in either direction with respect to the underframe.

7. In railway draft rigging, in combination with longitudinal members and connecting transverse members of a railway vehicle underframe, longitudinal sills extending beyond the ends of said longitudinal members, a drawbar, a yoke, a key connecting and supporting said drawbar and yoke and disposed beyond the ends of said longitudinal members, and cushioning mechanism including a housing embraced by said yoke, abutting said drawbar, and key supported from said sills, whereby said mechanism is stressed upon relative movement between said drawbar and sills.

8. In railway draft rigging, in combination with longitudinal members of a railway vehicle underframe, draft sills, a tie casting connecting intermediate portions of said sills, a striking casting and sill tie member connecting the ends of said sills, a drawbar and a yoke mounted between said sills with the yoke normally abutting said tie casting, means connecting the drawbar and yoke and disposed beyond the ends of said longitudinal members, cushioning mechanism including a housing embraced by said yoke and disposed rearwardly of said drawbar, and a key with its ends received in slots in said sills and passing through slots in said yoke and housing, the slots in said yoke and sills permitting rearward movement of said key while preventing forward movement thereof from normal position, whereby under the action of draft forces the cushioning mechanism is compressed between the yoke and key and under the action of buffing forces it is compressed between the drawbar and tie casting.

9. In railway draft rigging, in combination with longitudinal underframe members, sills disposed between said members, a drawbar, a yoke, a key connecting and supporting said drawbar and yoke, cushioning mechanism comprising a housing, another key supporting one end of said housing between said sills, said underframe members being apertured to provide for application and removal of said key, and friction elements received in the other end of said housing,

said mechanism being embraced by said yoke and abutting said drawbar in order to be stressed upon relative movement between said drawbar and sills.

10. In railway draft rigging, in combination with longitudinal members and connecting transverse members of a railway vehicle underframe, sills movably mounted with respect to said members, said transverse members extending above and below said sills, cushioning mechanism disposed between said sills, means supporting said mechanism between said sills from said longitudinal members, means connecting said transverse members and normally directly abutting the ends of said cushioning mechanism, and draft lugs connected to said sills and also normally directly abutting the ends of said mechanism, whereby the latter is actuated upon movement of said sills in either direction with respect to said underframe members.

11. In railway draft rigging, longitudinal underframe members, draft sills disposed between said members and extending beyond the ends thereof, a drawbar and a yoke disposed between said sills, a key connecting said drawbar and yoke beyond the ends of said members, and intersecting said sills, cushioning mechanism comprising a slotted housing embraced by said yoke and disposed adjacent said drawbar, a key received in the slotted portion of said housing and slots in said sills for connecting said cushioning mechanism and sills, said underframe members being slotted to provide for application and removal of said key, and back stop means connecting said sills and disposed rearwardly of said yoke and cushioning mechanism for limiting rearward movement thereof.

DONALD S. BARROWS.