Feb. 22, 1938. D. S. BARROWS 2,109,126

DRAFT RIGGING

Filed May 19, 1930

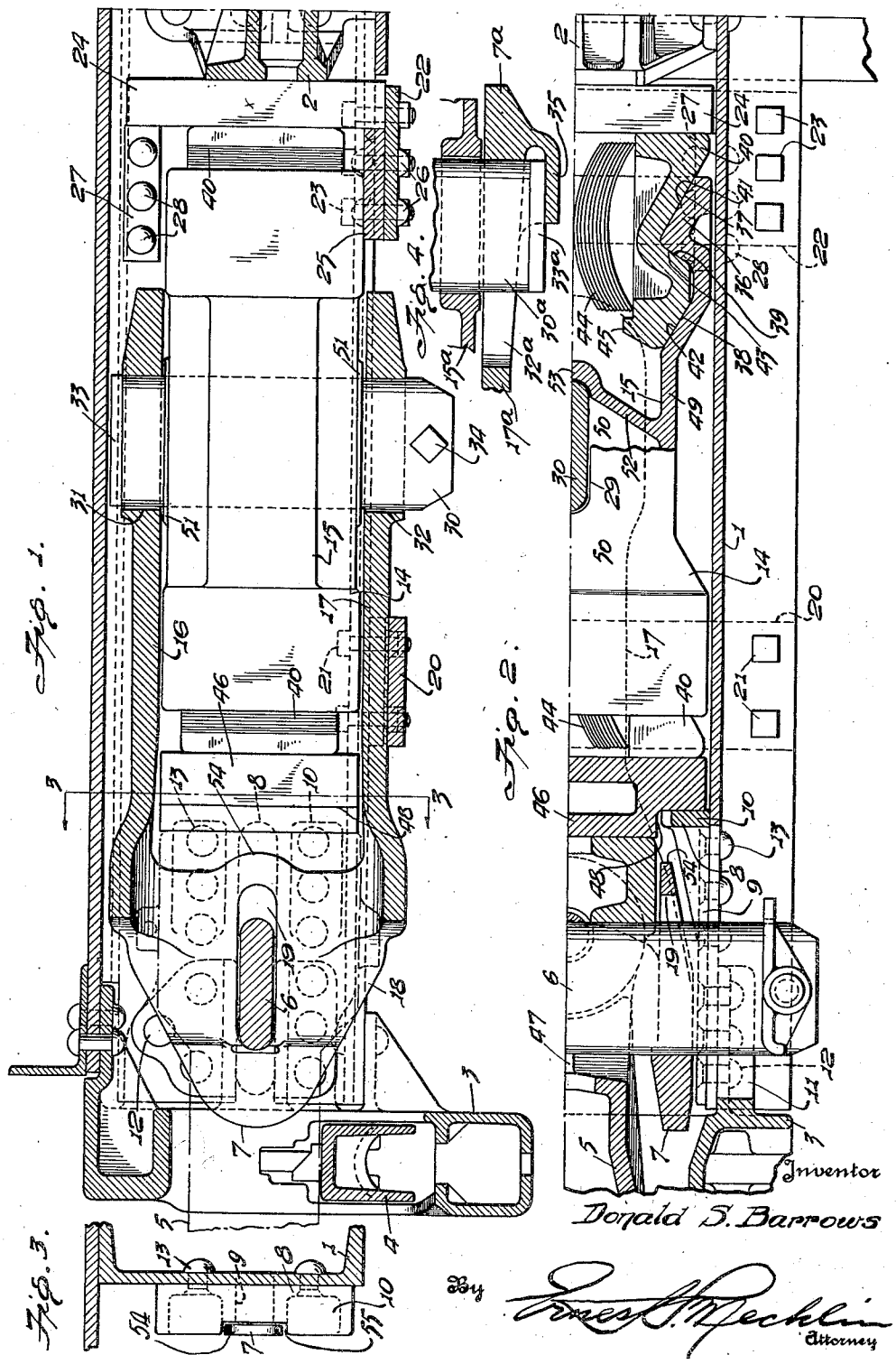


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Inventor
Donald S. Barrows

By James J. Mecklin
Attorney

Patented Feb. 22, 1938 2,109,126

UNITED STATES PATENT OFFICE

2,109,126

DRAFT RIGGING

Donald S. Barrows, Rochester, N. Y., assignor to The Symington-Gould Corporation, Rochester, N. Y., a corporation of Maryland

Application May 19, 1930, Serial No. 453,667

18 Claims. (Cl. 213—56)

This invention relates to railway draft rigging, and the combination therewith of friction shock absorbing mechanism for providing a greater travel and greater energy absorbing capacity for the associated coupler or drawbar under the action of buffing forces than when subjected to draft forces.

The principal object of my invention, generally considered, is to provide, in combination with a car underframe, a friction draft mechanism or gear involving elements preferably enclosed in a housing, shell or column member, and operating in series, said member desirably having a slot for receiving a connecting draft key, and so arranged that the mechanism will function to provide a greater energy absorbing capacity and movement under buff than under draft.

Another object of my invention is the provision of draft rigging associated with the center or draft sills of a railway vehicle, and involving shock absorbing or cushioning means connected to the coupler or drawbar of the vehicle by yoke-acting means involving upper and lower link portions and a vertical key for connecting said link portions to the mechanism, a horizontal key being preferably provided for connecting the yoke-acting means to the drawbar, the draft sills being provided with means for limiting forward and rearward movement of the end elements of the mechanism so that under the action of draft forces only that portion of the mechanism adjacent the front end is stressed, while under the action of buffing forces, all of the cushioning mechanism is actuated.

A further object of my invention is to provide means for securing an increased shock-absorbing capacity and travel, as compared with the capacity and travel under the action of draft forces, for the drawbar or coupler of a railway vehicle under the action of buffing forces, preferably involving the use of a double-ended friction draft gear with a slotted housing or column member containing friction elements at each end associated with followers which, in turn, engage stop members on the vehicle underframe, the coupler or drawbar of the vehicle being connected to the housing by vertical yoke-acting means, the rear end of which is key-connected to the housing, the ends of the first key being received in corresponding slots in associated draft lugs connected to the draft sills of the vehicle, the second key extending vertically and being independent of the sills.

A still further object of my invention is the provision of a unitary yoke-acting device involving a hooded portion adapted to receive and be key-connected to an associated drawbar, and upper and lower link portions extending therefrom for connection with an associated cushioning mechanism.

An additional object of my invention is the provision of a novel form of front draft lug and its connection with an associated striking casting and draft sills.

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 drawing illustrating my invention, the scope whereof is defined by the appended claims:—

Figure 1 is a vertical, longitudinal, sectional view between the sills of a railway vehicle underframe illustrating one embodiment of my slotted double-ended series draft gear and associated draft rigging and lugs, said gear being illustrated in side elevation.

Fig. 2 is a fragmentary, horizontal, sectional view of the rigging and associated parts of the vehicle underframe shown in Fig. 1, portions of the draft gear and associated parts being illustrated in plan.

Fig. 3 is a fragmentary, transverse sectional view on the line **3—3** of Fig. 1, looking in the direction of the arrows.

Fig. 4 is a fragmentary vertical sectional view corresponding to Fig. 1, but showing a portion of a modified yoke-acting means.

On account of the present day weight of, and speed at which railway vehicles travel, the limit within which the accompanying energy can be absorbed without damage to said vehicles has passed beyond the conventional 2½" and 2¾", regardless of the energy absorbing capacity of draft gears having such limits of movement. In a draft gear for absorbing large amounts of energy, it is desirable that the capacity thereof be greater on buff than on draft, because a greater amount of energy is necessarily absorbed under buff. It is also desirable, for the same reason, that the distance the coupler and associated draft gear parts move in absorbing energy be greater under the action of buffing force than under the action of draft force, whereby the slack to be taken up in starting a train is maintained relatively low, while at the same time, provision is made for absorbing the requisite energy without exerting too great a resisting force.

The conventional draft gear travel is adequate for draft forces, but a gear or cushioning mech-

anism of capacity high enough to apparently absorb the normal or usual buffing shocks has too high a capacity to handle draft forces without unduly stressing the coupler and attachments. The desired characteristics of a gear or cushioning mechanism have been found to be moderate travel and capacity under pull, and at least twice the travel and capacity under buff. Desirable results have been accomplished by using two draft gears with a yoke surrounding the outermost or front gear so that it works only under pull, while both gears are closed under buffing forces. Such an arrangement involves radical changes in car construction if it is desired to accommodate a standard gear at the rear of the yoke.

In accordance with my invention, I accomplish the desired result heretofore obtained by using instead of two gears a single gear or cushioning mechanism comprising a shell, housing or column member, preferably open at both ends, and slotted adjacent the central portion for receiving an upright or vertical key adapted to connect said shell with the associated yoke-acting means, preferably taking the form of a vertical yoke device having a hooded front end and upper and lower draft link portions, said shell receiving friction elements in both ends with the elements in one end only operated on draft, and all elements operated on buff.

Referring now to the drawing in detail, like parts being designated by like reference characters, and first considering the embodiment of my invention illustrated in Figs. 1, 2 and 3, there are shown portions of an underframe adapted for use with railway vehicles and comprising center or draft sills 1 connected by a back stop or combined back stop and center filler casting 2, and a striking casting or combined striking casting and sill tie member 3. In the present embodiment, the casting 3 is shown provided with a device 4 for centering the associated coupler or drawbar 5, but it will be understood that I am not limited to such showing.

The sills 1 are preferably slotted, as is usual, for receiving a draft key 6 serving to connect the drawbar 5 with yoke-acting means 7. Connected to said draft sills 1 are front draft lugs 8, preferably slotted, as indicated at 9, for receiving the ends of the key 6, with the slotted portions reinforced by flanges 10, the rear portions of which preferably serve as the stop portions of the castings and are reinforced by forwardly extending tapering flange portions, the upper and lower of which preferably lie along the top and bottom edges of the lugs, and the intermediate ones of which lie along the upper and lower edges of the slotted portions thereof.

In order to provide for efficiently connecting the casting 3 and the lugs 8 to the webs of the sills 1, said striking casting 3 is desirably provided with rearwardly extending web portions 11 normally lying on either side of the slots 9, and common rivets 12 may be provided for connecting said portions 11 of the striking casting, the webs of the sills 1, and the draft lugs 8 together. Those portions of the draft lugs 8 extending rearwardly of the portions 11 of the striking casting, of course, are desirably connected to the sills 1 by additional rivets 13.

Mounted between the sills 1 is a double-ended series friction draft gear 14 the housing or column member 15 of which is preferably supported between the upper and lower link or arm portions 16 and 17 of the yoke-acting means 7, which link portions are preferably integral with the hooded front end 18 of the yoke-acting means, the side walls of which are slotted, as indicated at 19, to receive the connecting key 6. The lower link portion 17 of the yoke is, in turn, preferably supported on a carry iron 20, the ends of which are desirably connected to the lower flanges of the sills by means of bolts or other suitable connecting means 21. That portion of the gear extending beyond the links 16 and 17 is desirably supported on another carry iron 22 connected to the lower flanges of the sills 1 by bolts or the like 23. The carry iron 22 also desirably supports the associated rear follower 24, and in order to hold said follower in proper engagement with the associated back stop 2, a stop member 25 is desirably connected as by means of rivets 26 to the carry iron 22 with its rear edge in engagement with the follower 24. The upper end of the follower 24 may likewise be engaged by stop means 27 connected as by means of rivets 28 to the sills 1 of the vehicle, whereby its upright position is maintained.

The housing, shell or column member 15 of the gear 14 is desirably open at its front and rear ends and slotted adjacent its intermediate or central portion, as indicated at 29, for receiving a vertical or upright key 30 serving for connecting said housing to the associated yoke-acting means 7 by passing through corresponding slots 31 and 32 in the upper and lower arms or link portions 16 and 17 thereof. The key 30 may be headed at its upper end, as indicated at 33, and be prevented from undesired removal by means of any suitable retaining device 34 passing through its lower end, or, if desired, may be inserted from below through an elongated slot 32^a in the lower link portion 17^a, as shown in the modification illustrated in Fig. 4, because of the cover plate which normally connects the upper portions of the sills and prevents insertion from above, said key 30^a, in such instance, being desirably headed at its lower end, as indicated at 33^a, and retained in position with respect to the yoke-acting means 7^a and the housing 15^a, when the yoke-acting means 7^a is pulled forward to the normal position illustrated, so that the shelf or ledge portion 35 on the link portion 17^a underlies the lower end of the key and holds the same in desired position.

Each end of the housing or shell 15 is formed, in the present embodiment, double bell-mouthed, that is, it is provided with diagonally extending walls 36 providing outermost flaring or diagonally disposed friction surfaces 37 and inwardly disposed, but preferably parallel, friction surfaces 38 with a shouldered portion 39 therebetween. Cooperating with the friction surfaces and shouldered portions of the shell or housing 15 are both front and rear friction shoes or wedges 40 provided with correspondingly flaring friction surfaces 41 and 42 normally engaging the friction surfaces 37 and 38 respectively on the shell, and provided with shouldered portions 43 therebetween for cooperating with the correspondingly shouldered portions 39 on the housing and limiting outward movement of said friction elements 40 with respect to the housing after assembly therewith.

In order to urge the friction elements 40 into engagement with the friction surfaces on the housing 15, resilient means 44, preferably in the form of curved leaf springs, are provided between the friction elements at each end of the housing, said leaf springs at each end preferably involving two sets of concavely bowed or curved springs with

the concave sides facing the adjacent friction elements 40. In order to prevent shifting of the springs with respect to the friction elements 40, said elements are desirably formed with lugs 45 adjacent their inner ends for limiting inward movement of the springs, outward movement thereof being limited by the corresponding followers 24 and 46.

The front follower 46 is maintained in upright position by being disposed between the butt or drawbar 5 of the vehicle coupler and the front friction elements 40, and is designed to transmit buffing forces between said drawbar and the friction elements 40 to effect compression of the gear 14. In order to provide for the increased travel of the draft key 6 for permitting the closing of the mechanism at both ends of the gear, the rear ends of the slots 9 in the lugs or cheek plates 8 are disposed rearwardly from the normal position of the rear edge of the key 6 a distance equivalent to the aggregate travel of the friction elements at both ends of the housing 15. In order to have the stop shoulders 10 spaced rearwardly of the rear ends of the slots 9, while still maintaining the normal distance between the rear end of the drawbar slot 47 and the rear face of the drawbar, it is desirable to notch the front follower 46, as indicated at 48, so that the front face of the front follower is disposed forwardly of the stop shoulders 10, and the faces of the follower which engage said stop shoulders. The front follower is supported in proper position between the link portions 16 and 17 of the yoke-acting means 7.

The friction shell or housing 15, inwardly or intermediate the sloping walls 36 forming the bell-mouthed portions, is desirably constructed by connecting the innermost ends of said sloping walls by longitudinal webs 49 extending between the longitudinally extending upper and lower walls 50. Said walls 50 are apertured to provide for the slot 29 through the housing, as previously described, and are desirably reinforced around said slot by a beading 51. Between the walls 50, the construction is desirably rigidified by providing diagonal walls 52 connecting the innermost surfaces of the walls 50 and joining the adjacent ends of the slot 29 to provide continuations 53 of the ends of the slotted portions of the housing between the upper and lower walls thereof, as indicated.

In order to allow the necessary relative travel between the key 6 and the yoke-acting means 7, the slots 19 in the hooded portion of the yoke-acting means 7 are desirably continued beyond the normal position of the rear edge of the key 6, and in order to avoid interference with the draft lugs 8, the side walls of the yoke hood are extended rearwardly locally, as indicated at 54, the shoulder or stop portions 10 of the draft lugs 8 being notched or cut away, as indicated at 55, to clear said extended portions 54, as shown most clearly in Fig. 3.

When the coupler is subjected to draft forces, the front follower 46 is held stationary against the front stop lugs 8 and the coupler stem or drawbar 5 pulls the yoke-acting means 7 forwardly through the connecting key 6 which, in turn, pulls the housing 15 through the connecting key 30, causing the housing to push forwardly over the front friction elements 40 and thereby force them together against the resistance of the springs 44, actuating only the front cushioning mechanism whereby the cushioning effect on draft is only one-half of the total capacity of the double-ended gear illustrated, and the travel of the drawbar on draft with respect to the draft sills is only one-half of the total permissible compression of the gear. It will be understood that under the action of draft forces, the rear friction elements 40 are pulled forwardly with the housing, leaving the rear follower 24 in normal position between the lugs 25 and 27 and the back stop 2.

Under the action of buffing forces, the drawbar 5 engages the front follower 46, pushing the front friction elements 40 into the front opening of the housing 15 and simultaneously moving said housing rearwardly over the rear friction elements 40 so that a full compression of the gear on buff may be effected, thereby providing not only for increased buffing capacity, but for drawbar travel equal to the aggregate travel permitted by the friction elements at each end of the gear. Although, for convenience and economy in manufacture, the gear is preferably made symmetrical so that the travel and capacity provided by each end is identical, yet this is not essential, and the capacities and travels of the two ends of the gear may be either equal or different, as desired.

From the foregoing description, taken in connection with the accompanying drawing, it will be seen that I have devised a form of draft rigging and associated double-ended series gear which provides for a greater travel of the drawbar and greater shock absorbing capacities under the influence of buffing forces than under the influence of draft forces. Although the two ends of the gear housing are illustrated as being similar, it will be understood that I am not limited to this showing. Although I have illustrated certain preferred embodiments of my invention, 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, in combination with draft sills, a drawbar, a draft gear comprising a housing, a rear follower for said gear, means connecting said drawbar and housing for moving the latter forward independently of said rear follower, a back stop normally engaged by said rear follower for limiting rearward movement thereof, means underlying the rear end of said housing and said follower, and a stop member connected to said underlying means forwardly of said rear follower for holding the same in engagement with said back stop.

2. In railway draft rigging, in combination with a coupler, a yoke device comprising a plurality of vertically spaced arms connected adjacent their forward ends by horizontally spaced webs, said coupler having its rear end partially housed between said arms and connecting webs, means extending through said coupler and openings in the housing portion of said yoke device for connecting said coupler and device, a column member and associated friction elements at each end forming a double-acting draft gear positioned to the rear of said coupler and disposed between the free end portions of said arms, a follower at each end of said gear, means for maintaining said followers in upright positions, a connecting key intersecting and projecting above and below said column member, said arms having a pair of vertically aligned openings receiving the end portions of said key, some of the openings in the yoke device, receiving the connecting means, being elongated so that the

coupler may move rearwardly with respect to said column member, without transmitting buffing forces from said coupler to said column member through said yoke device, said key having portions projecting laterally from its upper end and supported on the upper arm of said yoke device, and means intersecting the lower end portion of said key for preventing undesired upward movement.

3. In railway draft rigging, in combination with draft sills having slots, a slotted coupler, a yoke device comprising a pair of vertically spaced arms connected at their forward ends by slotted webs, means extending through the slots in said coupler and yoke device webs for connecting the coupler to the forward portion of said yoke device, and with its end portions received in said sill slots, cushioning mechanism positioned to the rear of said coupler, disposed between the arms of said yoke device, and comprising a housing with independently operating cushioning means in each end, front and rear follower-acting means, front and rear stop means connected to said sills and spaced apart so as to provide a pocket for said mechanism, said front stop means having slots to correspond with said sills for receiving the end portions of said connecting means and serving to limit forward movement of said housing means on draft so as to effect the operation of only one of said cushioning means, the front follower-acting means normally extending forwardly of the stop faces of, and the rear ends of said slots in, said front stop means, in order to allow said stop faces to be disposed rearwardly of the rear ends of the sill slots, while maintaining the normal distance between the rear end of the coupler slot and the rear face of said coupler, and adapted to be actuated by the coupler upon rearward movement thereof.

4. In railway draft rigging, in combination with draft sills, a coupler, a draft gear, a rear follower for said gear, means connecting said coupler and gear for moving the latter forward independently of said rear follower, a backstop normally engaged by said rear follower for limiting rearward movement thereof, supporting means underlying said follower, and a stop member connected to said supporting means forwardly of said follower for holding it in engagement with said backstop.

5. In railway draft rigging, in combination with draft sills, a coupler, a draft gear, a rear follower for said gear, means connecting said coupler and gear for moving the latter forward independently of said rear follower, a backstop normally engaged by said rear follower for limiting rearward movement thereof, supporting means underlying said follower, a stop member connected to said supporting means forwardy of said follower, and stop means secured to said sills forwardly of the upper part of said follower, said stop member and stop means serving to hold said follower in engagement with the backstop.

6. In railway draft rigging, in combination with draft sills having slots, a slotted coupler, a slotted yoke device, means extending through the slots in said coupler and yoke device for connecting said members, and with its end portions received in said sill slots, cushioning mechanism associated with said yoke device and comprising front and rear independently operating cushioning means, front and rear follower-acting means, front and rear stop means connected to said sills and spaced apart so as to provide a pocket for said mechanism, said front stop means being slotted to correspond with said sills for receiving the end portions of said connecting means and serving to limit forward movement of said front cushioning means on draft, the front follower-acting means normally extending forwardly of the stop faces of, and the rear ends of said slots in, said front stop means, in order to allow said stop faces to be disposed rearwardly of the rear ends of the sill slots, while maintaining the normal distance between the rear end of the coupler slot and the rear face of said coupler, and adapted to be actuated by said coupler upon rearward movement thereof.

7. In railway draft rigging, in combination with draft sills having slots, a slotted coupler, a slotted yoke device, means extending through the slots in said coupler and yoke device for connecting said members, and with its end portions received in said sill slots, cushioning mechanism associated with said yoke device, front follower-acting means, front stop means connected to said sills, said front stop means being slotted to correspond with said sills for receiving the end portions of said connecting means and serving to limit forward movement of said cushioning mechanism on draft, the front follower-acting means normally extending forwardly of the stop faces of, and the rear ends of said slots in, said front stop means, in order to allow said stop faces to be disposed rearwardly of the rear ends of the sill slots, while maintaining the normal distance between the rear end of the coupler slot and the rear face of said coupler, and adapted to be actuated by said coupler upon rearward movement thereof.

8. In railway draft rigging, in combination with draft sills, a drawbar and connected vertical yoke-acting means, a friction draft gear comprising a column member, a set of friction elements cooperating with said column member at each end, a follower engaging said friction elements at each end of the gear, front stop means for preventing forward movement of the front follower while permitting rearward movement thereof, and back stop means preventing rearward movement of the rear follower, means for maintaining said followers in upright positions, the connection between the drawbar and yoke-acting means allowing rearward buffing movement of said drawbar independently of said yoke-acting means, said yoke-acting means being connected to said column member for actuating only the front elements on draft, said drawbar engaging the front follower directly on buff for actuating the front friction elements, and moving the column member to actuate the rear friction elements.

9. In railway draft rigging, in combination with draft sills, a drawbar and connected yoke-acting means having arms extending rearwardly, a friction draft gear comprising a column member, cushioning means at each end cooperating with said column member, leaving a clear space at the central portion of the column member, a follower at each end engaging said cushioning means, means for maintaining said followers in upright positions, front draft lugs for preventing forward movement of said front friction elements on draft while permitting rearward movement thereof, backstop means for preventing rearward movement of said rear friction elements on buff, and means connecting the rear end portions of said arms of said yoke-acting means to the central portion of said column member and the forward portion thereof to said drawbar, said connection between the drawbar and yoke-acting means allowing rearward movement of said

drawbar independently of said yoke-acting means, whereby only the front cushioning means is actuated upon the application of draft forces, while both front and rear cushioning means are actuated under the action of buffing forces.

10. In railway draft rigging, in combination with draft sills, a drawbar and vertical yoke-acting means, a friction draft gear comprising a housing open at front and rear ends, sets of friction elements cooperating with said housing at each end, resilient means at each end disposed between said friction elements of the sets for urging said elements apart and into engagement with said housing, a follower engaging said friction elements at each end of the gear, means for maintaining said followers in upright positions, front stop means for preventing forward movement of the front follower from normal position, backstop means for preventing rearward movement of the rear follower from normal position, means connecting said yoke-acting means to said housing for moving the latter forwardly when the drawbar is subjected to draft forces, and means connecting said drawbar and yoke-acting means for pulling the latter forward, while allowing the drawbar to move rearward on buff, independently of the yoke-acting means, for actuating the front resilient means and moving the housing to effect actuation of the rear resilient means.

11. In railway draft rigging, in combination with draft sills, a drawbar, yoke-acting means comprising a hooded portion adapted to receive the drawbar, and upper and lower arms extending rearwardly therefrom, a draft key connecting said drawbar and yoke-acting means for the transmission of draft forces, while allowing rearward movement of said drawbar, independently of said yoke-acting means, upon the application of buffing forces, a friction draft gear disposed between the rear end portions of said arms and comprising a housing open at front and rear ends, friction elements at each end received in said housing, resilient means at each end disposed between said friction elements for urging them into engagement with said housing, a follower at each end of said gear, means for maintaining said followers in upright positions, front draft lugs disposed at the sides of said yoke-acting means for preventing forward movement of the front friction elements from normal position when the drawbar is subjected to draft forces, backstop means for preventing rearward movement of the rear friction elements from normal position when the drawbar is subjected to buffing forces, and a draft key extending through corresponding slotted portions in the housing and arms whereby only the forward friction elements are actuated upon forward movement of the housing when draft forces are applied to the drawbar.

12. In railway draft rigging, in combination with draft sills, a drawbar, and vertical yoke-acting means, a friction draft gear comprising a housing open at both ends, friction elements cooperating with said housing at each end, a follower at each end of said gear, means for maintaining said followers in upright positions, said yoke-acting means extending above and below said housing, a key received in a slot in said housing and slots in said yoke-acting means, whereby when said means is pulled forwardly, the friction elements in only the front end of the housing are actuated, said key being retained in place by said yoke-acting means, and a key connecting said drawbar and yoke-acting means for the transmission of draft forces, said key allowing rearward movement of the drawbar with respect to said yoke-acting means.

13. In railway draft rigging, in combination with draft sills connected by a cover plate, a one-piece vertical hooded yoke device positioned between said sills and consisting of top and bottom elements and a front hood, a friction draft gear disposed between said top and bottom elements and comprising a housing, and a draft key headed at its lower end and inserted from below because of said cover plate, said key extending through corresponding slots in said top and bottom elements and housing for actuating the gear under the influence of draft forces, said bottom element having a ledge portion extending from one end of the slot therein and adapted to normally underlie the key for retaining it in place, said slot being elongated beyond the free edge of said ledge to allow for movement of said key to a releasing position to permit disconnection of said housing and yoke device.

14. In railway draft rigging, in combination with draft sills having slots, a slotted coupler, a slotted yoke-acting device, means extending through the slots in said coupler and yoke-acting device for connecting said members, and with its end portions received in said sill slots, a friction draft gear comprising a column member, cushioning means at each end of, and cooperating with, said column member leaving a clear space at the central portion thereof, means extending through said clear space and connecting the rear portions of said yoke-acting device to said column member, front follower-acting means, front stop means connected to said sills, said front stop means being slotted to correspond with said sills for receiving the end portions of said connecting means and serving to limit forward movement of said gear on draft, the front follower-acting means normally extending forwardly of the stop faces of, and the rear ends of the slots in, said front stop means, in order to allow said stop faces to be disposed rearwardly of the rear ends of the sill slots while maintaining a normal distance between the rear end of the coupler slot and the rear face of said coupler, rear stop means disposed between said sills, and a rear follower normally engaging said stop means, said connection between the coupler and yoke-acting device allowing rearward movement of said coupler independently of said yoke-acting device, whereby only the front cushioning means is operated upon the application of draft forces, while both front and rear cushioning means are operated under the action of buffing forces.

15. A draft mechanism comprising center sills, front and rear stop means arranged between said sills, a one-piece vertical hooded yoke-acting device supported between said sills and comprising top and bottom elements connected by a front hood, said hood having normally horizontal key slots, a double-acting draft gear positioned between said top and bottom elements and comprising a column member, cushioning means at each end cooperating with said column member and comprising friction wedges received in said column member and urged apart by springs, said wedges and the engaged portions of said column member having cooperating shoulders limiting movement of said wedges out of said column member, said column member being provided with a normally vertical slot in its medial portion in the space between said friction elements, said yoke elements having slots normally registering with

said column slot, a key extending through said registering slots for connecting the yoke-acting device to the draft gear and causing the entire column member to move with the yoke during buff and draft, front and rear followers normally engaging the outer ends of said friction wedges and the corresponding stop means, means comprising elements secured to the sills forwardly of the upper part of the rear follower for maintaining the latter in engagement with the rear stop means, said elements serving to keep said follower in normally vertical position when the engaging friction wedges are pulled forward with the column member under the action of draft forces, a coupler shank extending into the hood of the yoke-acting device and normally engaging the front follower for maintaining it in vertical position in engagement with the front friction wedges and moving the latter independently of the yoke-acting device during buff, and a horizontal key, of less width than the length of the hood horizontal slots, extending through said shank and slots for causing the yoke-acting device to move forwardly with said shank on draft.

16. In railway draft rigging, in combination with a drawbar, a friction draft gear comprising a column member, a set of friction elements cooperating with said column member at each end, stop means for preventing forward movement of the front friction elements while permitting rearward movement thereof, stop means preventing rearward movement of the rear friction elements, and a pair of links lying above and below said drawbar and draft gear, means connecting said drawbar and links, and means connecting said column member and links, with the lower link supporting said column member, to enable the drawbar to actuate only the front friction elements on draft, said drawbar actuating both front and rear friction elements on buff.

17. In railway draft rigging, in combination with a drawbar, yoke-acting means comprising a pair of vertically spaced arms connected by side walls adjacent their front ends and normally receiving said drawbar therebetween, means for transmitting draft forces only between said drawbar and yoke-acting means, a friction draft gear comprising a housing normally resting on the lower of said arms, cushioning means cooperating with said housing at front and rear ends, means for preventing forward movement of said front cushioning means while permitting rearward movement thereof, means for preventing rearward movement of said rear cushioning means, and a vertical draft key extending, uninterruptedly from top to bottom, through the rear portions of said arms and said housing for the transmission of draft forces therebetween whereby only the forward cushioning means are energized when the drawbar is subjected to draft forces, while both of the cushioning means are actuated under the action of buffing forces.

18. In railway draft rigging, in combination with draft sills, a cushioning device comprising a housing open at its rear end, a set of friction elements cooperating with said housing at said rear end, a follower engaging the rearmost portions of said friction elements, a backstop normally engaged by said follower and connecting said sills, and a combined carrier and front stop for said follower extending between the sills beneath the housing and follower and formed with a shouldered portion normally engaging the front face of said follower for preventing forward movement thereof.

DONALD S. BARROWS.