Dec. 20, 1960 S. G. GUINS 2,965,246

DRAFT GEAR RIGGING

Filed April 4, 1958

4 Sheets-Sheet 1

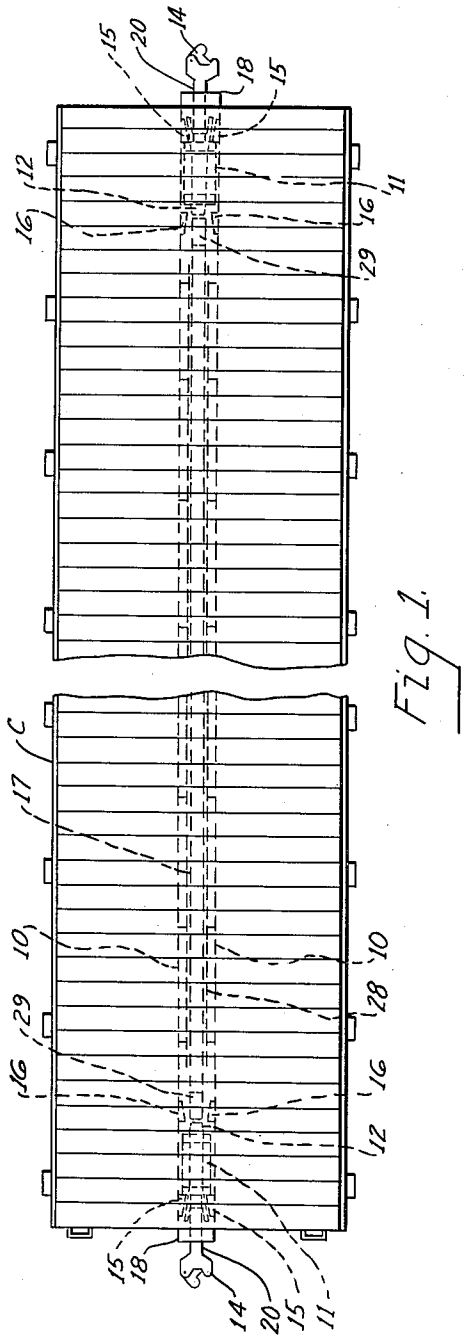


Fig. 1.

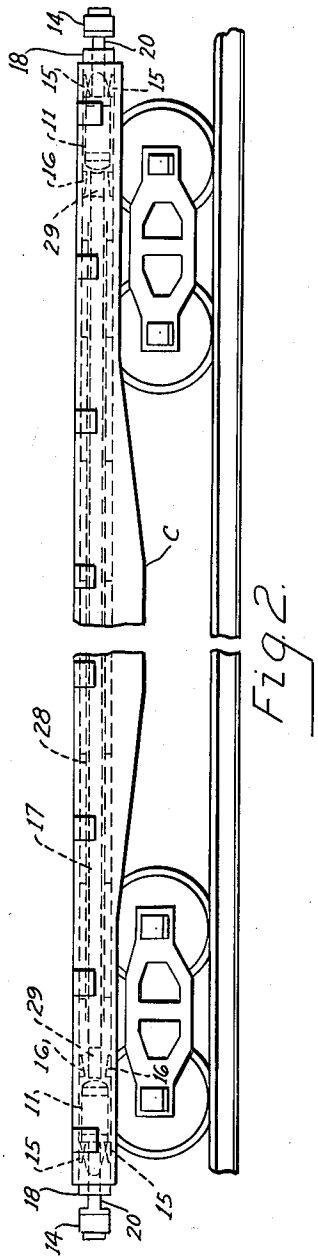


Fig. 2.

INVENTOR.
SERGEI G. GUINS
BY Bosworth, Sessions, Herrstrom & Knowles
ATTORNEYS.

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4 Sheets-Sheet 2

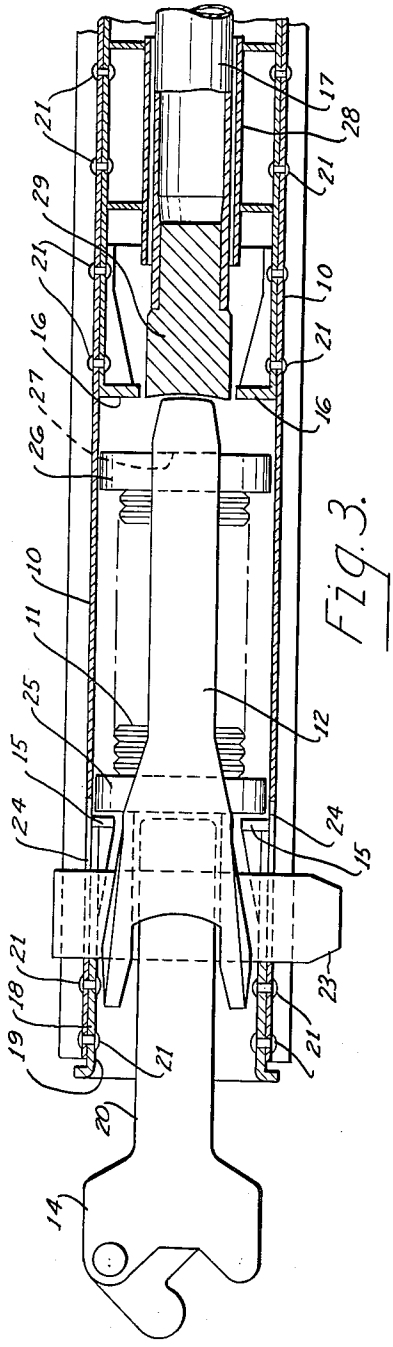


Fig. 3.

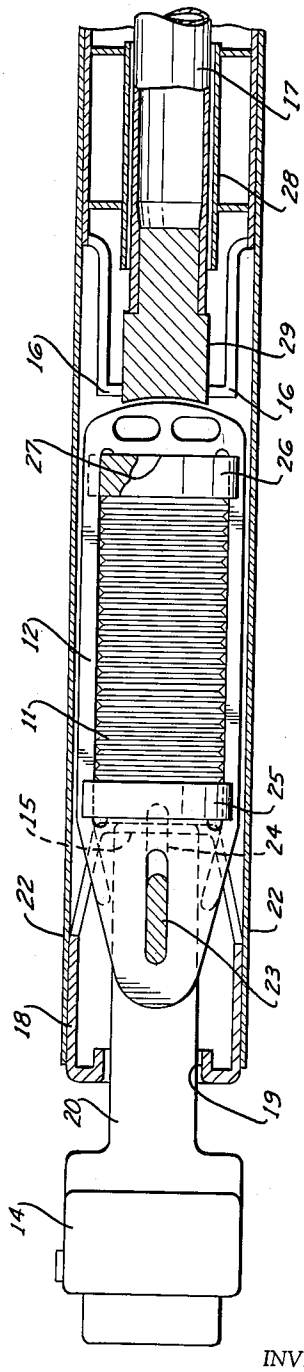


Fig. 4

INVENTOR.
SERGEI G. GUINS
BY Bosworth, Sessions, Herrstrom & Knowbe
ATTORNEYS.

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DRAFT GEAR RIGGING

Filed April 4, 1958 4 Sheets-Sheet 3

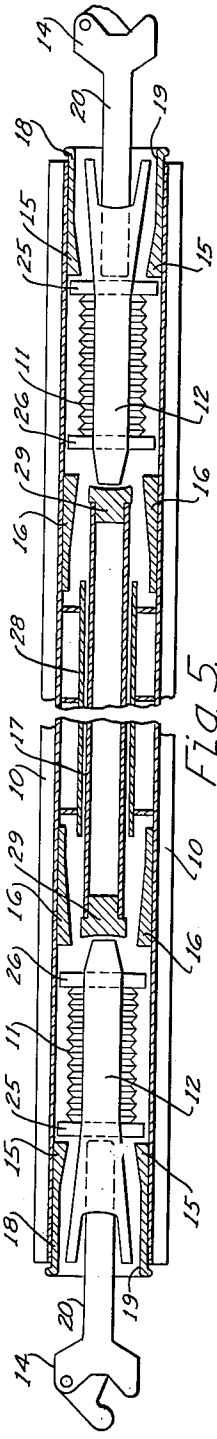


Fig. 5.

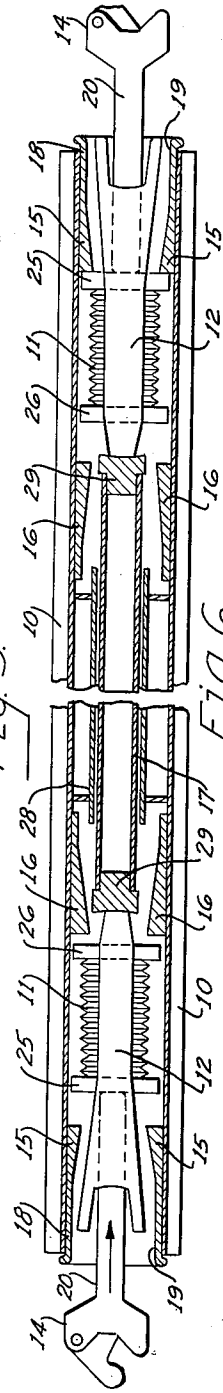


Fig. 6.

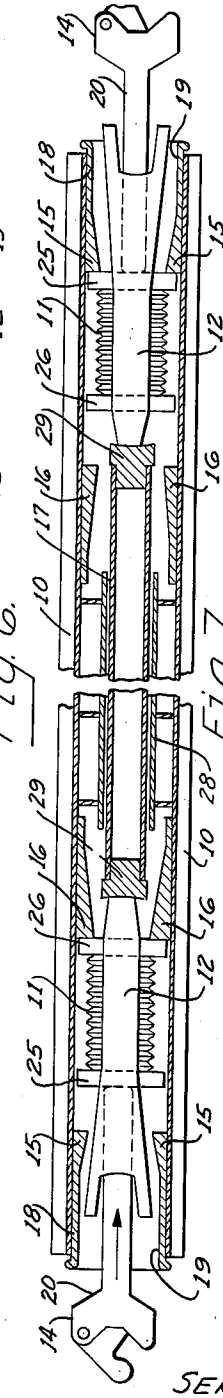


Fig. 7.

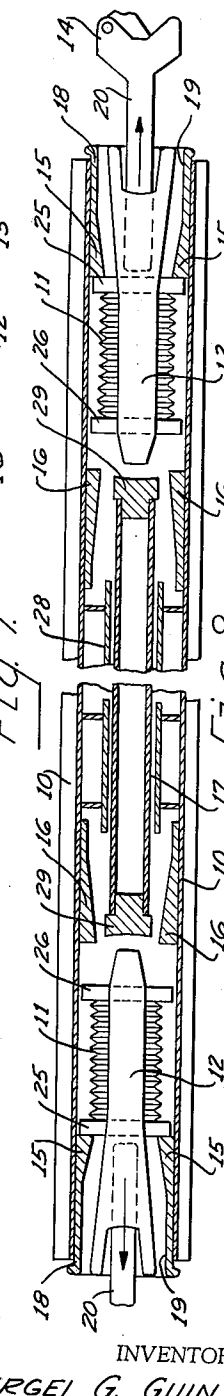


Fig. 8.

INVENTOR.
SERGEI G. GUINS
BY Bosworth, Sessions, Herrstrom & Knowles
ATTORNEYS.

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S. G. GUINS

2,965,246

DRAFT GEAR RIGGING

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4 Sheets-Sheet 4

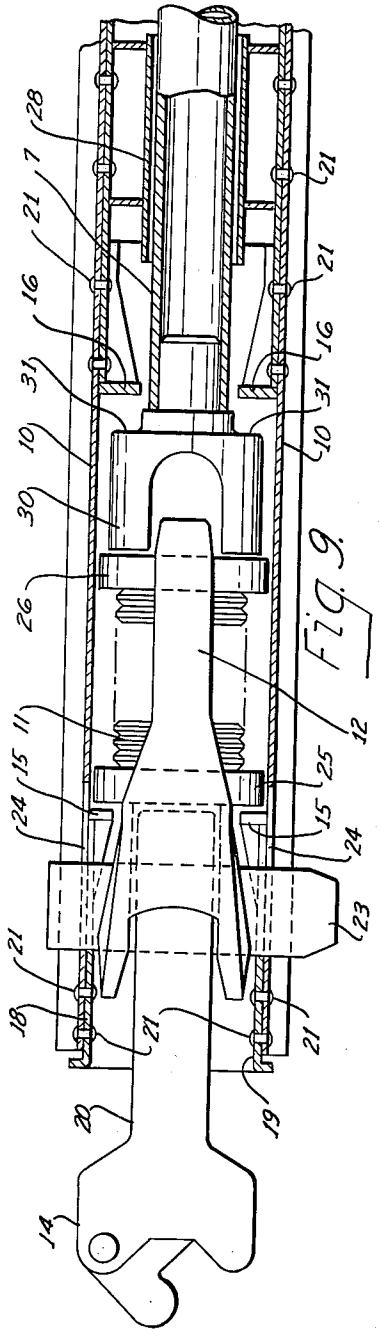


Fig. 9.

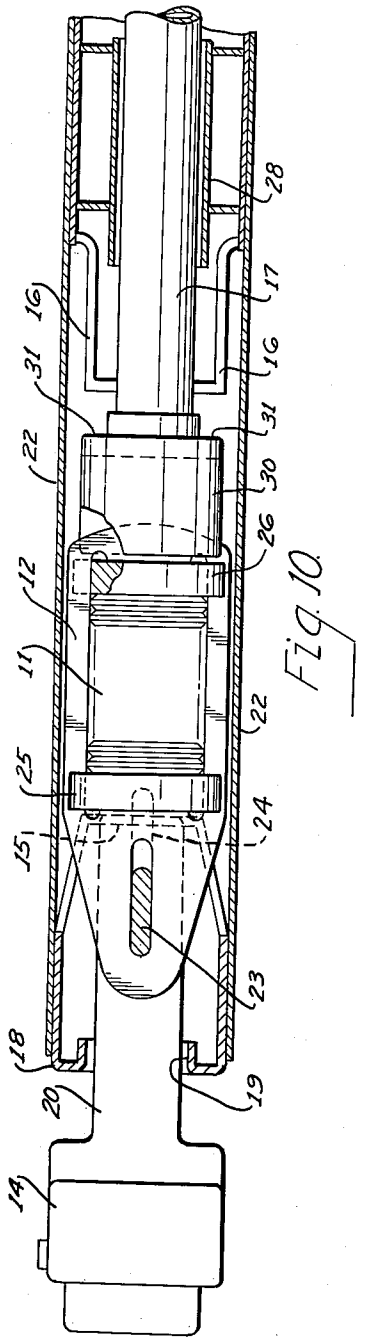


Fig. 10.

INVENTOR.

SERGEI G. GUINS

BY Bosworth, Sessions, Herrstrom & Knowles

ATTORNEYS.

United States Patent Office

2,965,246

Patented Dec. 20, 1960

2,965,246

DRAFT GEAR RIGGING

Sergei G. Guins, Olmsted Falls, Ohio, assignor to The Chesapeake and Ohio Railway Company, Cleveland, Ohio, a corporation of Virginia

Filed Apr. 4, 1958, Ser. No. 726,425

6 Claims. (Cl. 213—8)

This invention relates to draft gear rigging for railway cars and more particularly to arrangements for increasing the energy-absorbing capacity of such rigging for forces imposed upon it by buffing blows on the coupler.

The problem of increasing or decreasing the velocity of the cars is involved in the operation of moving goods and people about by railway cars. The rate of change of velocity is a function of the impact force required to accomplish it, and in railroading, the change of velocity of a railway car is accomplished by pulling or pushing. Those impacts imposed by pulling are known in railroad parlance as draft forces, and those impacts imposed by pushing a railway car are known as buffing forces.

It is common practice to absorb the impact of both draft forces and buffing forces by means of draft gear rigging built into the cars. Briefly, draft gear rigging for a conventional railway car embodies a coupler or coupling member at each end of the car and an associated cushioning unit disposed between center sills comprising a longitudinal center member of the underframe. The buffing or draft forces imposed upon a coupler are transmitted to the cushioning unit associated with it which reduces the rate of change of velocity or the impact and then transmits the applied force through appropriate stop members to the center sills of the railway car. An impact applied to a coupler at one end of a car is absorbed only by its associated cushioning unit and then transmitted to the center member at some point near that end of the car. In conventional draft gear rigging, therefore, buffing forces stress the center member entirely in compression while the draft forces stress the center member entirely in tension.

Of the two forces thus imposed upon the draft gear rigging, the blow type or buffing force is generally the greater. Maximum buffing forces are generally encountered during switching operations when a railway car is placed in motion by shunting or humping. During these operations, the shunted or humped car is allowed to coast under the velocity imparted to it by the engine or gravity until it reaches a stop or a standing car on the track to which it has been directed, at which time the moving car's velocity is sharply decreased and a high buffing impact force is produced.

It can be seen that the speed at which a railway car can be shunted or humped with due regard for its contents is limited by the energy-absorbing capacity of its draft gear rigging. The limitation on the shunting and humping speeds is an important factor in determining the amount of time and money that is required to make up a train or rearrange the cars of a train. If the cars could be shunted or humped at a higher speed, an appreciable amount of time and money would be saved. While an increase in the energy-absorbing capacity of each of the independently acting cushioning units of a conventional draft rigging would accomplish this, a more economical way is to utilize the idle capacity available in a conventional railway car, i.e., the idle capacity of that cushioning unit remote from the coupler receiving the impact on buffing.

The principal object of my invention is, therefore, to provide a draft gear rigging that utilizes all of the energy-absorbing capacity available in a conventional railway car for cushioning buffing forces. Another object of my invention is to provide a draft gear rigging having sufficient capacity for absorbing the impact of draft forces. A further object of my invention is to provide draft gear rigging with increased energy-absorbing capacity for buffing impact forces that can be readily adapted to existing railway cars. Still another object of my invention is to provide draft gear rigging which utilizes the energy-absorbing capacity of the cushioning units at both ends of a conventional railway car for absorbing a buffing impact applied to one end of the car.

Other objects and advantages of my invention will become apparent from the following description taken together with the accompanying drawings of a preferred embodiment, in which:

Figure 1 is a plan view of a railway flatcar in which the arrangement of the primary elements of the structure of my invention are indicated in broken lines.

Figure 2 is a side elevation of the railway car shown in Figure 1.

Figure 3 is a fragmentary plan view, in enlarged scale, showing one of two identical ends of the draft rigging of my invention and associated cushioning units disposed between the center sills of a railway car.

Figure 4 is a fragmentary elevation view, in enlarged scale, showing the mechanism shown in Figure 3 with portions of the underframe illustrated in vertical section.

Figure 5 is a plan view showing, in simplified form, the complete mechanism of the draft rigging of my invention disposed between the longitudinal sills of a railway car, shown in horizontal section, in which the mechanism is in a neutral position, i.e., when the car is at rest without being subjected to draft or buffing forces.

Figure 6 is a plan view, like Figure 5, but showing the mechanism as it appears when the railway car is subjected to a light buffing force.

Figure 7 is a plan view like Figure 5 but showing the mechanism when the railway car is subjected to a heavy buffing force.

Figure 8 is a plan view like Figure 5 showing the mechanism as it appears when subjected to draft forces.

Figure 9 is a fragmentary plan view similar to Figure 3, but showing a modified form of my invention.

Figure 10 is a fragmentary elevation view of the modified form of my invention shown in Figure 9.

Briefly, I accomplish the objects of my invention by utilizing the combined energy-absorbing capacity of the cushioning units located at either end of a car in a conventional draft gear rigging to absorb buffing forces applied to one end of the car, while retaining the conventional practice of using the energy-absorbing capacity of only one unit to absorb the draft force applied to one end of the car. This is done by providing a longitudinal compression member which transmits a portion of the buffing forces applied to the cushioning unit at one end of the car to the cushioning unit at the other end of the car.

Referring now to the drawings, a general layout of the draft gear rigging of my invention, as arranged in a railway flatcar C, is shown in Figures 1 and 2. In general, the draft gear rigging is disposed between a pair of parallel center sills **10** comprising the longitudinal center member of the car's underframe, and includes conventional cushioning units **11** carried by yokes **12** located near each end of the longitudinal center sills **10**, a conventional coupler **14** associated with each of the cush-

ioning units 11, draft lugs 15 and buffing lugs 16 located outwardly and inwardly, respectively, of the cushioning unit for transmitting forces imparted to the cushioning unit to the longitudinal center sills 10. Extending longitudinally between the cushioning units 11 is a longitudinal compression member 17 for transmitting buffing impact forces from one cushioning unit to the other.

The details of the mechanism can best be seen in Figures 3 and 4 showing in plan view and side elevation, respectively, one of two identical ends of a preferred form of my draft gear rigging.

In Figure 3, the two parallel spaced apart center sills 10 comprising the main longitudinal member of the underframe are shown in section. Lying between and connecting the ends of center sills 10 is a striker casting and coupler carrier 18 suitably apertured as at 19 to receive stem 20 of the coupler 14. The striker casting and coupler carrier 18 may be fastened to center sills 10 by any suitable means such as rivets 21. A yoke 12, disposed between the center sills 10 and between the vertically spaced carrier plates 22, is connected to stem 20 of coupler 14 by a horizontal draft key 23 in a conventional manner. The draft key 23 is inserted in suitably aligned slots in stem 20 and yoke 12 through slotted openings 24 in the center sills 10. The draft key receiving slot in yoke 12 is elongated in the usual manner providing some longitudinal lost motion in the connection between coupler stem 20 and yoke 12. The cushioning unit 11 is carried by yoke 12 in a conventional manner. The cushioning unit includes an outward follower plate 25 and an inward follower plate 26. Follower plate 25 is engaged by the butt of stem 20 of coupler 14 while follower plate 26 engages the inner side 27 of the inward end of yoke 16.

The draft lugs 15 of striker casting and coupler carrier 18 and the buffing lugs 16 limit the longitudinal movement of cushioning unit 11 with respect to the center sills 10. The buffing lugs 16 are attached to center sills 10 by any suitable means such as rivets 21. It will be noted that the draft lugs 15 and buffing lugs 16 are spaced apart a sufficient distance to provide for a certain amount of longitudinal movement of cushioning unit 11, this is of importance to my invention as pointed out below in the description of its operation. The compression member 17 is disposed between the yokes 12 and is carried in suitable guides 28 welded or otherwise suitably attached to center sills 10. Compression member 17 is preferably of tubular form, though members of other suitable transverse cross section may be employed. Preferably, a buffing block 29 is disposed in either end of compression member 17 for engagement with the inward end of yoke 12 and for the transmission of forces between the yoke and the compression member. I prefer that the compression member guides 28 be of sufficient strength and number to prevent any columnar deflection of compression member 17 when subjected to compression stresses during normal operation. In length, the compression member 17, together with the associated buffing blocks 29, should be such that the buffing blocks 29 lightly engage the inward ends of each of the yokes 12 when no forces are applied to the couplers, disposing the cushioning units 11 in their relaxed or uncompressed condition toward draft lugs 15.

The operation of the draft gear rigging of my invention is illustrated in Figures 5 through 8 showing the mechanism in various conditions of operation.

Figure 5 depicts the draft gear rigging in the neutral condition of operation such as is experienced when no forces are being exerted on the couplers of the car. It will be noted that the cushioning units 11 are relaxed or uncompressed and that the follower plates 25 and 26 are spaced apart the full distance allowed by the yoke 12 carrying them. Buffing blocks 29 lightly engage the inward ends of each of yokes 12 disposing them outwardly so that the outward follower plate 25 of each of the cushioning units 16 approaches the draft lugs 15 at either end of the car. The butts of stems 20 of couplers 14 apply no force to the outward follower plates 25.

Figure 6 shows that condition of operation where a light buffing force is imposed upon the coupler 14 at the left end of the rigging as seen in Figure 6. The light buffing force exerted in the direction indicated by the arrow on the stem 20 of the left-hand coupler 14 is applied through the stem or draw bar 20 to the outward follower plate 25 of the left-hand cushioning unit 11. As this force is applied, the cushioning unit 11 seeks to move inwardly or to the right while being compressed against the inward end of yoke 12 which, at the same time, transmits the originally applied buffing force to left-hand buffing block 29 through compression members 17 and from the right-hand buffing block 29 to yoke 12 at the right-hand end of the car. The inward end of the right-hand yoke 12 engages follower plate 26 of its associated cushioning unit 11 moving it outwardly and compressing it upon engagement of follower plate 25 with draft lugs 15 at that end of the car. It will be seen that in the case of a light buffing force, a portion of the energy-absorbing capacity of each of the cushioning units 11 is utilized to absorb the impact of the force and finally it is transmitted to the center sills 10 through right-hand draft lugs 15 stressing the center sills only in tension.

Figure 7 depicts that condition of operation encountered when a heavy buffing force is applied to the left-hand coupler 14. As in the case of a light buffing force, the impact is applied through the draw bar or stem 20 of the left-hand coupler to the left-hand cushioning unit 11 through its forward follower plate 25 and thence through its inward follower plate 26 to yoke 12 and to the left-hand buffing member 29. Compression member 17 then transmits the force to the right-hand end of the car where it is applied to the right-hand cushioning unit 11 through buffing member 29, the inward end of yoke 12 and inward follower plate 26. The right-hand cushioning unit 11 is moved to the outward end of its draft pocket so that follower plate 25 engages draft lugs 15 imposing a tension upon center sills 10. In the condition illustrated in Figure 7, the magnitude of the impact force applied to the left-hand coupler is sufficient to compress the right-hand cushioning unit 11 sufficiently so that the left-hand cushioning unit 11 and its associated yoke 12 are displaced inwardly until the left-hand inward follower plate 26 engages buffing lugs 16 at that end of the car. Upon the engagement of the buffing lugs 16 by follower plate 26, a portion of the total force is transmitted to the center sills of the railway car and stresses them in compression. In the case of a heavy buffing force, the compression stress transmitted to the center sills is generally greater than the stress in tension transmitted thereto; but the net stress in the center sills in compression is of a magnitude that is appreciably less than the compression stressing of the center sills in a conventional draft gear rigging.

Figure 8 illustrates that condition of operation when a draft force or pulling force is applied to the ends of the car. As indicated by the direction of the arrow on the stem 20 of the couplers 14, the yokes 12 connected to these stems by horizontal draft keys 23 are disposed outwardly of each end of the car. Thus, outward follower plate 25 engages its respective draft lugs 15. At such time, each of the cushioning units 11 is compressed between draft lugs 15 engaged by outward follower plate 25 and the inward end of its associated draft yoke 12 engaged by inward follower plates 26. Compression member 17 lies idle in its guides between the two yokes. It can be seen that when a draft force is applied to one end only of the draft gear rigging of my invention, the energy-absorbing capacity of only one of the two cushioning units in the rigging is utilized.

Figures 9 and 10 illustrate, in an enlarged scale, the details of a modified form of my invention. The general arrangement of the elements in these figures is like that

of the preferred embodiment illustrated in Figures 3 and 4. In the modified form, however, the buffing member **30**, carried by ends of the compression member **17**, is bifurcated allowing for direct engagement of the buffing member **30** with rear follower plate **26** of the adjacent cushioning unit **11** and thereby allowing the transmission of buffing forces directly from the rear follower plate **26** to the buffing member **30** and thence to the compression member **17**.

In this form of my invention, when a heavy buffing blow is received on a coupler **14**, compressing to capacity the cushioning unit **11** at the opposite end of the car, the buffing stops **16** on the near end of the car are engaged by shoulders **31** on buffing member **30**, rather than directly engaged by the inward follower plate **26** as in the preferred embodiment of my invention.

The modified form of my invention illustrated in Figures 9 and 10 operates in a manner similar to that of the preferred embodiment of my invention as shown and described in connection with Figures 5 through 8. The principal difference in the two forms is the means used to transmit forces between each cushioning unit and the longitudinal compression member. In the preferred form, the inward end of the yokes is interposed between the cushioning units and the compression member; while in the modified form, the force is transmitted directly between the cushioning units and the compression member.

It will be apparent from the foregoing description of the operation of the draft gear rigging of my invention under varying conditions, that the energy-absorbing capacity for buffing forces is greatly increased by the utilization of the capacity of that cushioning unit at the end upon which the force is imposed together with the ordinarily idle capacity of the cushioning unit on the opposite end of the car. Measuring the energy-absorbing capacity of the cushioning units in terms of the difference in their length when in a relaxed or uncompressed condition and when in a fully-compressed condition. it can be seen that if a single cushioning unit as utilized in a conventional draft gear rigging shortens in length 2½ inches, the energy-absorbing capacity of the draft gear rigging of my invention as measured by this shortening would be 5 inches. It will be noted that the inward buffing stops **16** must be so located with respect to each of their associated cushioning units **11** when in the idle position that upon the initial impact of a buffing force, the inward follower plate **26** of the cushioning unit **11** first to receive the impact does not engage the inward buffing lugs **16** until the cushioning unit **11** at the opposite end of the car has been shortened or absorbed a portion of the impact.

It is further apparent from the foregoing description of the operation of the draft gear rigging of my invention that the net compression stress imposed upon the center sills **10** of the conventional railway car is less than the compressive stress imposed upon them in a conventional draft gear rigging by the amount of the compressive stress transmitted through the compression member **17** to the opposite end of the car where it is imposed upon the center sills stressing them in tension. There are, of course, compression forces set up in the compression member **17**, but this member is no part of the load bearing structure of the railway car and has as its sole purpose the transmission of such compression forces. Furthermore, this member, in its preferred form, is a tubular column suitably carried and guided by guides **28** held by center sills **10** which prevent any substantial deflection of the column. This reduction in the net stress applied to the center sills **10** becomes a distinct advantage when my invention is built into a new car because the size of the center sills may be reduced.

It will be seen that my invention is thus readily adaptable for use in existing cars having two conventional cushioning units and therefore the advantages obtained by it are not limited to newly built cars.

In connection with the building of new cars incorporating my invention, however, an additional advantage is obtained. Because that portion of heavy buffing forces absorbed by the near cushioning unit and applied to the underframe of the car stresses the center member in compression and that portion transmitted to the far cushioning unit and applied to the underframe of the car stresses the center member in tension, the next maximum stress in the center member of the railway car has been found by experiment to be a compression stress of appreciably less magnitude than the maximum compression stress in the center member of a car having conventional draft rigging. Thus, in building a new car, the weight of the center member can be safely reduced below that ordinarily required, this off-setting at least in substantial part, the cost and weight added to the car by the incorporation of other components of my mechanism.

Those skilled in the art will appreciate that various other changes and modifications can be made in the preferred forms of apparatus described herein without departing from the spirit and scope of the invention.

I claim:

1. A draft gear rigging for a railway car having couplers, a conventional underframe embodying a pair of fixed center sills and cushioning units disposed near the ends of the car, said fixed center sills being laterally spaced apart to accommodate said cushioning units and being connected at each end by members adapted to receive and support the stem of a coupler, each of said cushioning units being supported by said fixed center sills and mounted for movement in the space between said fixed center sills and being operatively connected with the stem of a coupler extending into the space between said fixed center sills inwardly of said connecting member, said draft gear rigging comprising a longitudinal compression member movable relative to said center sills and operatively interposed inwardly of and having butting engagement with said cushioning units and operable only in compression for transmitting buffing forces between said cushioning units, first stop members mounted on said fixed center sills outwardly of and respectively associated with each of said cushioning units, said first stop members being engageable by said associated cushioning unit for transmitting to said fixed center sills draft forces applied to said associated cushioning unit by said operatively connected coupler independently of said compression member to stress said fixed center sills in tension, and for transmitting to said fixed center sills buffing forces applied to said associated cushioning unit by said compression member independently of said operatively connected coupler to stress said fixed center sills in tension, and second stop members fixed to said fixed center sills inwardly of and respectively associated with each of said cushioning units, said second stop members being engageable by said associated cushioning unit for transmitting to said fixed center sills buffing forces applied to said associated cushioning unit by said operatively connected coupler to stress said fixed center sills in compression.

2. A draft gear rigging for a railway car having couplers, an underframe embodying a pair of fixed center sills and cushioning units disposed near the ends of the car, said fixed center sills being laterally spaced apart to accommodate said cushioning units and being connected at each end by a coupler carrier and striker casting apertured to receive and support the stem of a coupler, each of said cushioning units being supported by and between said fixed center sills and mounted for relative movement with said fixed center sills and being operatively connected with the stem of a coupler extending into the space between said fixed center sills, said draft gear rigging comprising a longitudinal tubular compression member disposed in the space between and movable relative to said fixed center sills and operatively interposed inwardly of

and having butting engagement with said cushioning units and operable only in compression for transmitting buffing forces between said cushioning units, guide means mounted on said fixed center sills cooperating with said compression member to limit lateral deflection of said compression member under compressive load, first stop members mounted on said fixed center sills outwardly of and respectively associated with each of said cushioning units and engageable by said associated cushioning unit, and second stop members mounted on said fixed center sills inwardly of and respectively associated with each of said cushioning units.

3. A draft gear rigging for a railway car having couplers, a conventional underframe embodying a pair of fixed center sills and cushioning units disposed near the ends of the car, said fixed center sills being laterally spaced apart to accommodate said cushioning units and being connected at each end by coupler carrier and striker castings apertured to receive and support the stem of a coupler, each of said cushioning units being supported by and between said fixed center sills and mounted for relative movement with said fixed center sills and being operatively connected with the stem of a coupler extending into the space between said fixed center sills through said apertured coupler carrier and striker castings, said draft gear rigging comprising a longitudinal tubular compression member disposed in the space between and movable relative to said fixed center sills and operatively interposed inwardly of and having butting engagement with said cushioning units and operable only in compression for transmitting buffing forces between said cushioning units, guide means mounted on said fixed center sills cooperating with said compression member to limit lateral deflection of said compression member under compressive load, first stop members mounted on said fixed center sills outwardly of and respectively associated with each of said cushioning units, said first stop members being engageable by said associated cushioning unit for transmitting to said fixed center sills draft forces applied to said associated cushioning unit by said operatively connected coupler independently of said tubular compression member to stress said fixed center sills in tension, and for transmitting to said fixed center sills buffing forces applied to said associated cushioning unit by said compression member independently of said operatively connected coupler to stress said fixed center sills in tension, and second stop members mounted on said fixed center sills inwardly of and respectively associated with each of said cushioning units, said second stop members being engageable by said associated cushioning unit for transmitting to said fixed center sills buffing forces applied to said associated cushioning unit by said operatively connected coupler independently of said compression member to stress said fixed center sills in compression.

4. A draft gear rigging for a railway car having couplers, keys, a conventional underframe embodying a pair of fixed center sills having a single laterally aligned key slot adjacent each end, yokes disposed near the ends of the car and a cushioning unit having inward and outward follower plates associated with and carried by each yoke, said fixed center sills being longitudinally parallel and laterally spaced and connected at each end by a lateral connecting member adapted to receive and support the stem of a coupler, each of said yokes being supported by and between and for relative movement with the fixed center sills, a coupler operatively connected to each yoke by a key extending through the coupler stem, the yoke and two aligned key slots in said fixed center sills and engageable endwise with the outward follower plate of the associated cushioning unit to apply inwardly and outwardly directed forces on the associated cushioning unit, a longitudinal compression member supported by and between and movable relative to the fixed center sills operatively interposed and having butting engagement with said cushioning units and operable only in compression for transmitting buffing forces between the cushioning units, draft lugs mounted on and extending laterally into the space between the fixed center sills outwardly of and associated with each of the cushioning units, the draft lugs being engageable by the outward follower plate of the associated cushioning unit for transmitting to the center sills independently of a key outwardly directed forces applied to the associated cushioning unit, and buffing lugs mounted on and extending laterally into the space between the fixed center sills inwardly of and associated with each of said cushioning units, the buffing lugs cooperating respectively with the draft lugs associated with said associated cushioning units and being longitudinally spaced apart from the cooperating draft lugs a distance greater than the length of one of said cushioning units when relaxed for transmitting independently of said compression member inwardly directed forces applied to said cushioning units to the fixed center sills.

5. A draft gear rigging for a railway car having couplers, keys, a conventional underframe embodying a pair of fixed center sills having a single laterally aligned key slot adjacent each end, yokes disposed near the ends of the car and a cushioning unit having inward and outward follower plates associated with and carried by each yoke, said fixed center sills being longitudinally parallel and laterally spaced and connected at each end by a lateral connecting member adapted to receive and support the stem of a coupler, each of said yokes supported by and between and for relative movement with the fixed center sills, a coupler operatively connected to each yoke by a key extending through the coupler stem, the yoke and two aligned key slots in said fixed center sills and engageable endwise with the outward follower plate of the associated cushioning unit to apply inwardly and outwardly directed forces on the associated cushioning unit, a longitudinal compression member supported by and between and movable relative to the fixed center sills operatively interposed and having butting engagement with the inward ends of their yokes for transmitting buffing forces between the cushioning units, draft lugs mounted on and extending laterally into the space between the fixed center sills outwardly of and associated with each of the cushioning units, the draft lugs being engageable by the outward follower plate of the associated cushioning unit for transmitting to the center sills independently of a key outwardly directed forces applied to the associated cushioning unit to the center sills, and buffing lugs mounted on and extending laterally into the space between the fixed center sills inwardly of and associated with each of said cushioning units, the buffing lugs cooperating respectively with the draft lugs associated with said associated cushioning units and being longitudinally spaced apart from the cooperating draft lugs a distance greater than the length of one of said cushioning units when relaxed for transmitting independently of said compression member inwardly directed forces applied to said cushioning units to the fixed center sills.

6. A draft gear rigging for a railway car having couplers, keys, a conventional underframe embodying a pair of fixed center sills having a single laterally aligned key slot adjacent each end, yokes disposed near the ends of the car and a cushioning unit having inward and outward follower plates associated with and carried by each yoke, said fixed center sills being longitudinally parallel and laterally spaced and connected at each end by a lateral connecting member adapted to receive and support the stem of a coupler, each of said yokes supported by and between and for relative movement with the fixed center sills, a coupler operatively connected to each yoke by a key extending through the coupler stem, the yoke and two aligned key slots in said fixed center sills and engageable endwise with the outward follower plate of the associated cushioning unit to apply inwardly and outwardly directed forces on the associated cushioning unit, a longitudinal compression

member supported by and between and movable relative to the fixed center sills operatively interposed said cushioning units and having butting engagement with their inward follower plates and operable only in compression for transmitting buffing forces between the cushioning units, draft lugs mounted on and extending laterally into the space between the fixed center sills outwardly of and associated with each of the cushioning units, the draft lugs being engageable by the outward follower plate of the associated cushioning unit for transmitting to the center sills independently of a key outwardly directed forces applied to the associated cushioning unit to the center sills, and buffing lugs mounted on and extending laterally into the space between the

fixed center sills inwardly of and associated with each of said cushioning units, the buffing lugs cooperating respectively with the draft lugs associated with said associated cushioning units and being longitudinally spaced apart from the cooperating draft lugs a distance greater than the length of one of said cushioning units when relaxed for transmitting inwardly directed forces applied to said cushioning units to the fixed center sills.

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