Jan. 19, 1965 V. S. DANIELSON 3,166,200

DRAFT GEAR RIGGING

Filed Oct. 19, 1962 2 Sheets-Sheet 1

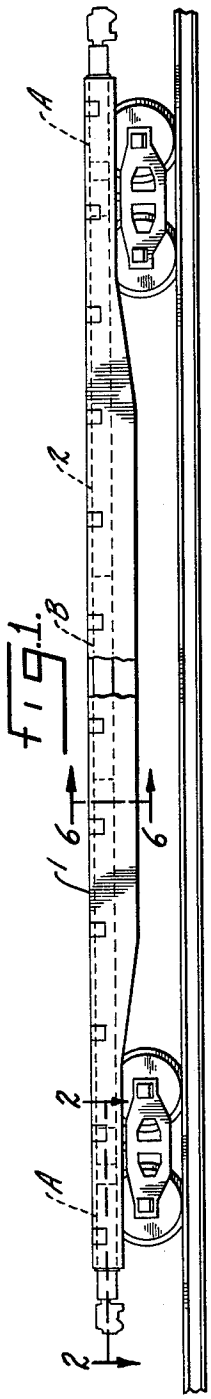


FIG. 1.

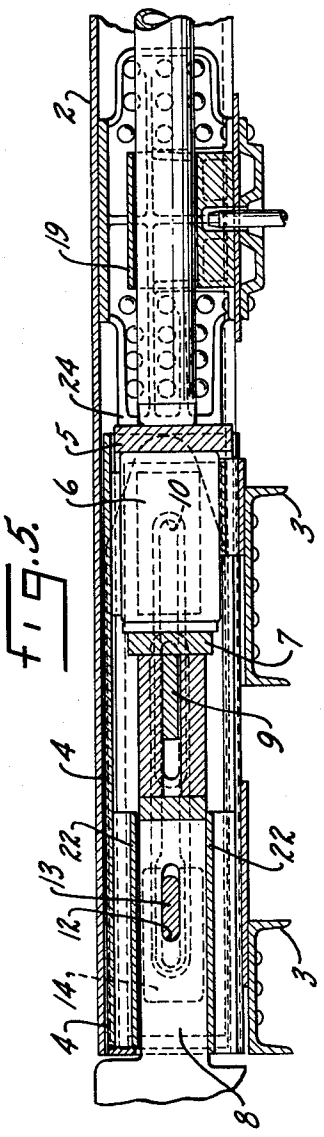


FIG. 5.

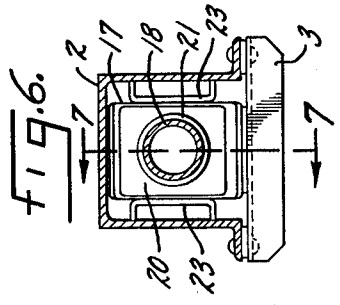


FIG. 6.

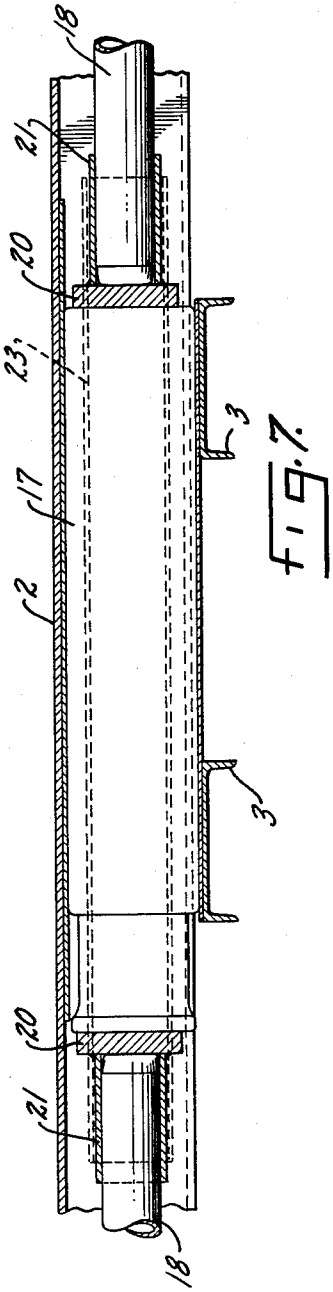


FIG. 7.

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DRAFT GEAR RIGGING

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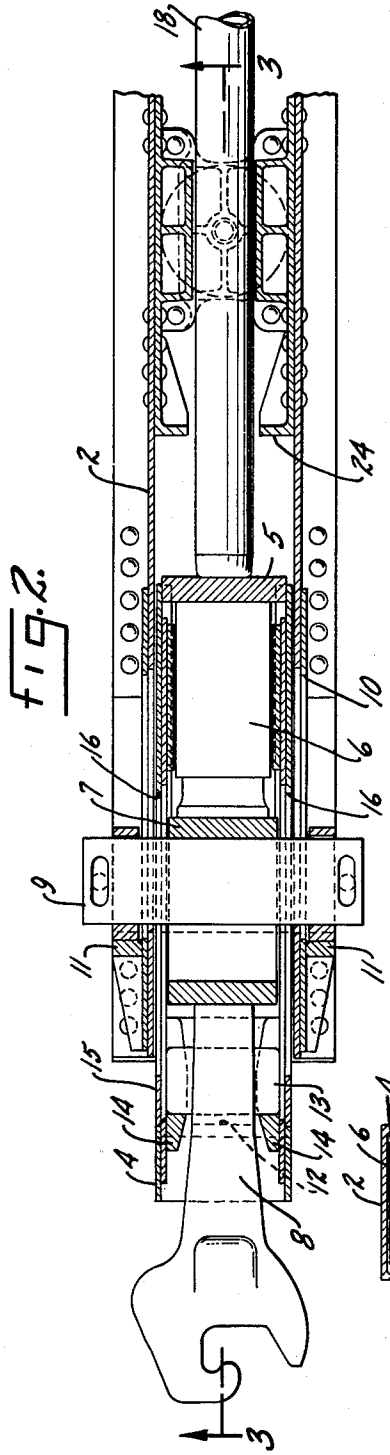


FIG. 2.

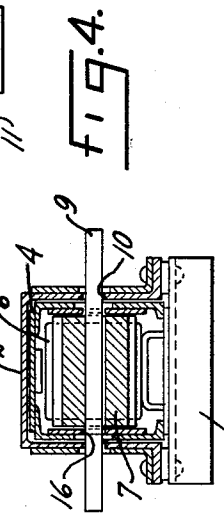


FIG. 4.

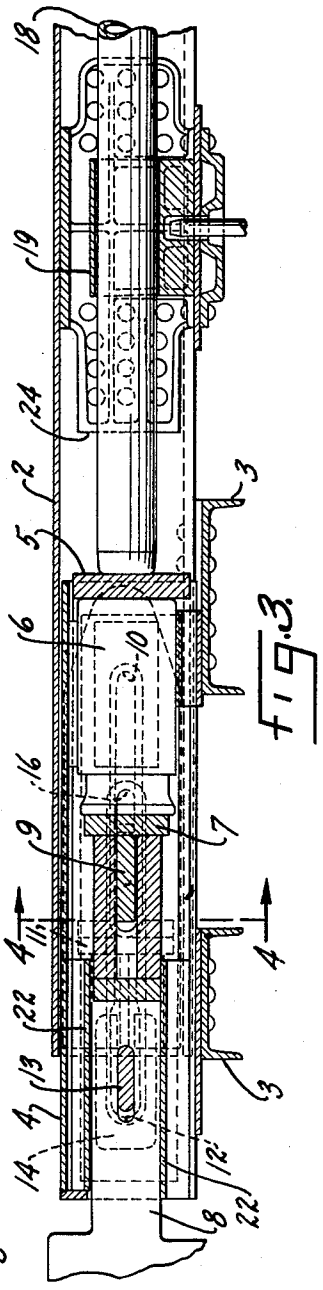


FIG. 3.

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DRAFT GEAR RIGGING

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10 Claims. (Cl. 213—8)

This invention relates to railroad car draft rigging and has for one object to provide a rigging which will substantially increase the cushioning effect and the length of travel through which the cushioning effect works in buff.

Another object is to provide in addition to the usual cushioning means at each end of a car, additional cushioning means therebetween and to arrange all such cushioning means so that they carry buff load in series, such load being distributed among all of said elements.

Another object is to provide a special type of sliding draft gear yoke which will without the necessity of special coupler shanks permit substantially increased travel of the coupler and draft gear under buffing forces.

Another object is to provide a draft gear wherein a minimum amount of travel under draft conditions and maximum amount of travel under buff conditions occurs.

Another object is to provide in connection with an elongated sliding yoke, a keyed follower interposed between the cushioning means and the coupler to make possible the use of a standard coupler shank while permitting increased longitudinal movement of the draft gear parts under buff.

Other objects will appear from time to time throughout the specification and claims.

The invention is illustrated more or less diagrammatically in the accompanying drawings, wherein

FIGURE 1 is a side elevation of a railroad car illustrating the invention;

FIGURE 2 is a horizontal section along the line 2—2 of FIGURE 1 on an enlarged scale;

FIGURE 3 is a section along the line 3—3 of FIGURE 2;

FIGURE 4 is a section along the line 4—4 of FIGURE 3 looking in the direction of the arrows;

FIGURE 5 is a section similar to FIGURE 3 showing the parts in buff;

FIGURE 6 is a vertical longitudinal section along the line 6—6 of FIGURE 1 on an enlarged scale;

FIGURE 7 is a section along the line 7—7 of FIGURE 6 looking in the direction of the arrows.

Like parts are indicated by like characters throughout the specification and drawings.

A railroad car 1 has extending longitudinally thereof a center sill 2, preferably U-shaped in cross section and open at the bottom except for carrier cross members generally identified at 3. Adjacent each end of the car the center sill encloses a draft gear rigging indicated in FIGURE 1 at A and shown in detail on a larger scale in FIGURES 2, 3, 4 and 5 and supported on the cross members 3.

The draft gear rigging includes a sliding yoke 4 closed at its inboard end by the butt 5. Seated on the yoke butt contained within the sliding yoke is a cushioning element 6 which is free to contract under pressure and upon release of such pressure to expand to its original dimension. A keyed follower 7 abuts the cushioning element 6 at one end, at the other end abuts the end of the conventional coupler shank 8, all these elements being contained within the sliding yoke 4. The follower key 9 extends through the keyed follower, through the sliding yoke and through slots 10 in the center sill and engages the front draft stop 11 on the car. The coupler shank 8 is slotted at 12 to receive the coupler key 13, which engages the lug 14 in the sliding yoke and closes the leading end of

the sliding yoke slot. A removable cover plate 15 makes it possible to remove and insert the key 13. The sliding yoke 4 is slotted at 16 in register with the center sill slots 10 which are much shorter than the sliding yoke slots 16 so as to permit the key 9 to move inwardly in the sliding yoke as the cushion 6 is compressed.

An arrangement such as above described is found at each end of the car, the assemblies merely being reversed.

Intermediate the length of the car at B in FIGURE 1 is an intermediate cushion element 17, FIGURES 6 and 7, contained within the center sill and supported on carrier members 3 and free to slide longitudinally. The cushion 17 just as the cushion 6 is free to contract under pressure and self-restoring in the absence of pressure. Interposed between each of the coupler-associated cushion elements at each end of the car and the intermediate cushioning element are compression means taking the form of push rods 18 which may be tubular or solid and of any desired shape. For convenience they are illustrated as tubular and capped at their ends. They are slidable in the guides 19 supported on the center sill and abut at one end on the yoke butt 5 and at the other end on an abutment plate 20 associated with one or the other end of the cushion 17, the abutment plates carrying push rod sleeves 21 to receive the push rods 18. The push rods 18 are supported along their length by a plurality of conventional guide members mounted on the U-frames, the details of which form no part of the present invention and are not here illustrated.

I have shown but a single intermediate cushion. There might be more and I have shown compression means taking the form of push rods between each pair of aligned cushioning elements in series.

Referring to FIGURE 4, the details of the sliding yoke are illustrated. The center sill and the yoke are shown as fabricated though they might be cast. Guide plates 22 maintain the keyed follower 7 and the coupler shank 8 in vertical alignment and permit longitudinal movement within the sliding yoke.

In FIGURE 6 is shown the guides 23 extending inwardly from the center sill to maintain the cushion 17 in horizontal alignment, the carrier members 3 maintain the cushion 17 in vertical alignment while permitting it to move longitudinally.

In FIGURE 5 is shown the maximum excursion possible inwardly to the sliding yoke where the yoke butt 5 has come in contact with the buffing stop 24.

The use and operation of the invention are as follows:

Each sliding yoke is, in draft, entirely independent of the other and its associated parts. When draft is applied, tension on the coupler shank causes the coupler key to engage the lug at the front end of the sliding yoke slot and tends to move the yoke outwardly away from the push rod, the follower key contacting the front draft stops. Further movement of the sliding yoke compresses the cushion member in the usual manner. The push rod which extends longitudinally of the car remains at rest and draft is cushioned by the one cushion member.

In buff, the situation is quite different. When buff is applied to the coupler, the coupler key on the struck end of the car is by-passed, the butt end of the shank applies pressure to the keyed follower, the follower key is by-passed and the follower applies pressure to the cushioning means and the sliding yoke moves to the right in FIGURE 2 and can go as far as shown in FIGURE 5 until the sliding yoke butt strikes the buff stop 24. As the sliding yoke butt moves to the right in FIGURES 2 or 5, it applies pressure to the push rod, moving it longitudinally. This applies pressure to the intermediate cushion means, compresses it and at the same time urges it toward the right in FIGURE 7. This applies pressure to the other

push rod and it in turn applies pressure to the yoke butt at the opposite end of the car, moving it if we think of it in terms of FIGURE 2 to the left and causing the cushioning means to compress against the keyed follower butt and force the follower key against the draft stops so that all three of the cushioning means act in series and in unison to cushion the shock.

I claim:

1. A draft gear rigging for a railway car including a coupler and an associated cushioning element at each end of the car, an intermediate floating cushioning element between the coupler-associated elements free to move longitudinally of the car adapted to cooperate with one another in buff, the intermediate cushioning element being inoperative in draft and compression means interposed in series between all said cushioning elements,

the cushioning elements at the end of the car being free to move away from the compression means.

2. A draft gear rigging for a railway car including a coupler and an associated cushioning element at each end of the car, an intermediate floating cushioning element between the coupler-associated elements free to move longitudinally of the car adapted to cooperate with one another in buff, the intermediate cushioning element being inoperative in draft and compression means interposed in series between all said cushioning elements,

draft and buffing lugs at the ends of the car to positively limit the movement of the couplers and associated cushioning elements, the intermediate cushioning element being free to move longitudinally responsive only to the compression means.

3. A draft gear rigging for a railway car including a coupler and an associated cushioning element at each end of the car, an intermediate floating cushioning element between the coupler-associated elements free to move longitudinally of the car adapted to cooperate with one another in buff, the intermediate cushioning element being inoperative in draft and compression means interposed in series between all said cushioning elements,

the intermediate cushioning element being mounted for longitudinal movement in either direction responsive only to the compression means.

4. A draft gear rigging for a railway car including a sliding yoke, a cushioning element therein, a railway car coupler shank keyed thereto, the key being entirely enclosed within the yoke, a keyed follower between the coupler shank and the cushioning element, a key therethrough extending outwardly from the sliding yoke and a draft stop in the path of the key.

5. A draft gear rigging for a railway car including a sliding yoke, a cushioning element therein, a railway car coupler shank keyed thereto, the key being entirely enclosed within the yoke, a keyed follower between the coupler shank and the cushioning element, a key therethrough extending outwardly from the sliding yoke and a draft stop in the path of the key,

the keyed follower being free to move longitudinally of the yoke as the cushioning element contracts under pressure and expands when pressure is reduced.

6. A draft gear rigging for a railway car including a sliding yoke, a cushioning element therein, a railway car coupler shank keyed thereto, the key being entirely enclosed within the yoke, a keyed follower between the coupler shank and the cushioning element, a key therethrough extending outwardly from the sliding yoke and a draft stop in the path of the key,

the yoke being ported to permit access to the coupler shank key.

7. A draft gear rigging for a railway car including a coupler and an associated cushioning element at each end of the car, an intermediate floating cushioning element between the coupler-associated elements free to move longitudinally of the car adapted to cooperate with one another in buff, the intermediate cushioning element being inoperative in draft and compression means interposed in series between all said cushioning elements,

the coupler and associated cushioning elements being free to move outwardly independent of the compression means.

8. A draft gear rigging for a railway car including a coupler and an associated cushioning element at each end of the car, an intermediate floating cushioning element between the coupler-associated elements free to move longitudinally of the car adapted to cooperate with one another in buff, the intermediate cushioning element being inoperative in draft and compression means interposed in series between all said cushioning elements,

all the cushioning elements being compressed in unison in series under buffing pressure by the compression means.

9. A draft gear rigging for a railway car including a coupler and an associated cushioning element at each end of the car, an intermediate floating cushioning element between the coupler-associated elements free to move longitudinally of the car adapted to cooperate with one another in buff, the intermediate cushioning element being inoperative in draft and compression means interposed in series between all said cushioning elements,

the coupler and associated cushioning elements being free to move outwardly independent of the compression means,

all the cushioning elements being compressed in unison in series under buffing pressure by the compression means.

10. In a railroad car, a fixed center sill extending from end to end thereof, a draft gear rigging at each end of the car including a draft gear yoke slidably mounted in the sill, a cushion element enclosed within the yoke, a coupler shank slidably associated with the yoke and means for limiting their relative longitudinal excursion, means interposed between the yoke and the center sill for limiting their relative excursion, an intermediate cushioning element supported in and free to move longitudinally with respect to the sill, compression means interposed between each yoke and the adjacent end of the intermediate cushioning element, each yoke being free in draft to move away from its associated compression means, the cushioning elements within the yoke and the intermediate cushioning element being compressed in unison in buff.

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