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DRAFT APPLIANCE FOR RAILWAY CARS

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2 Sheets-Sheet 1

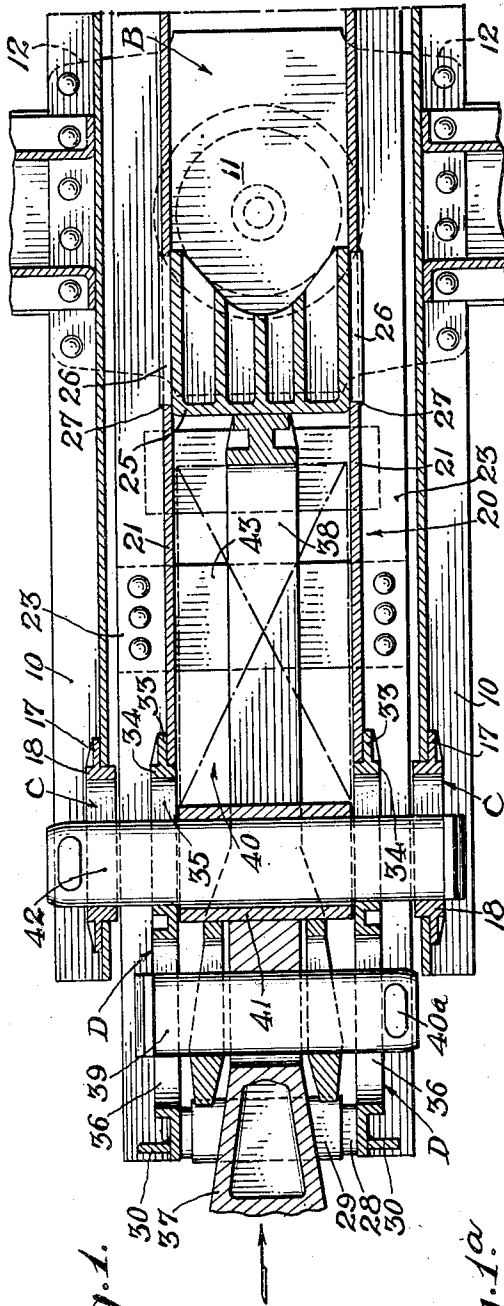


Fig. 1.

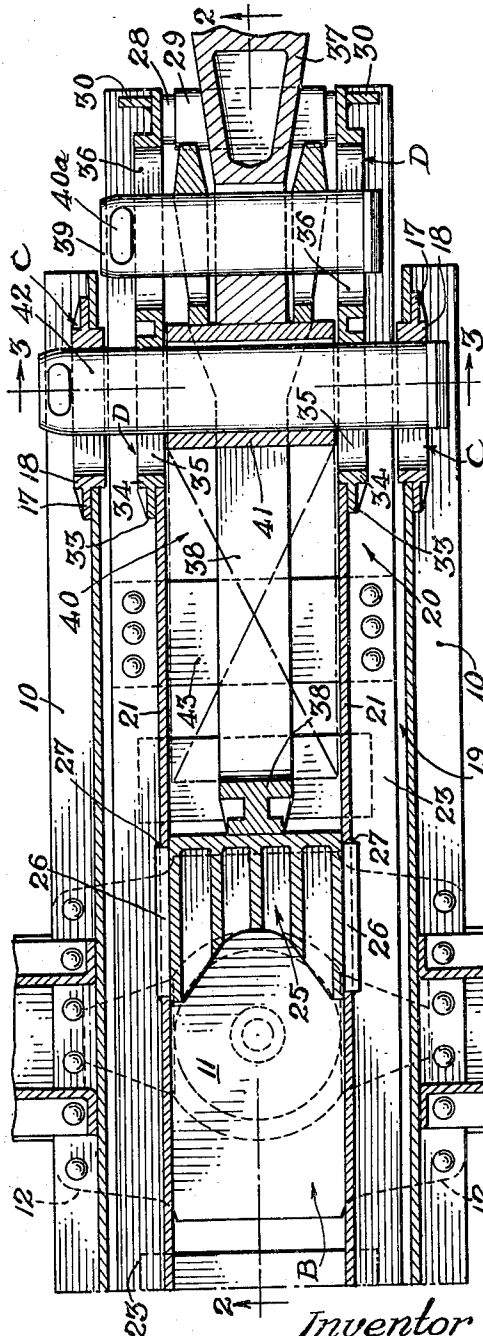


Fig. 1a.

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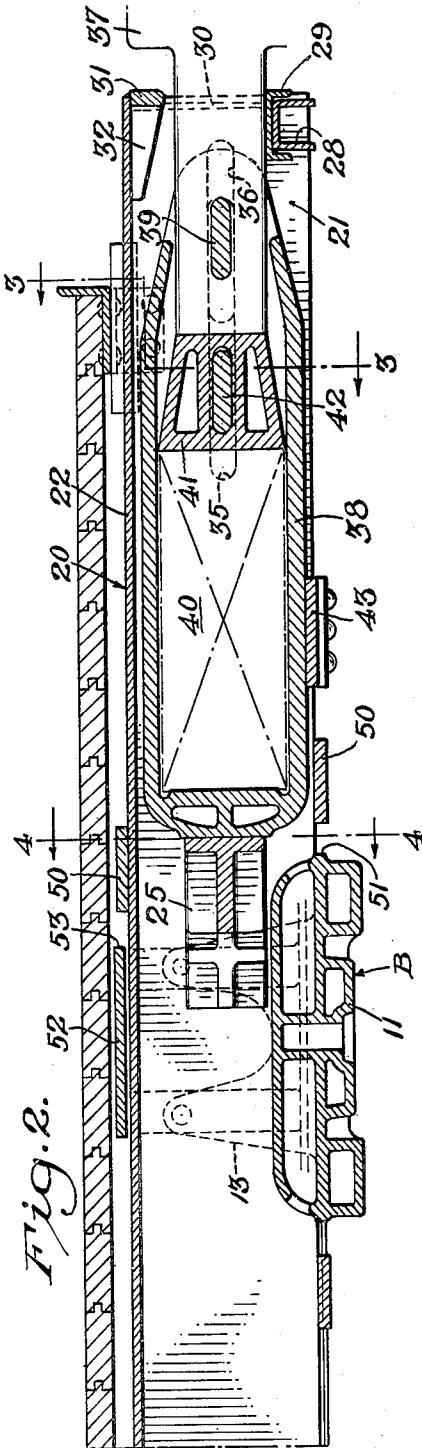
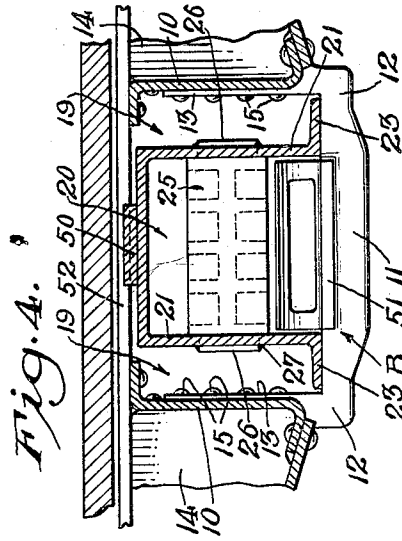
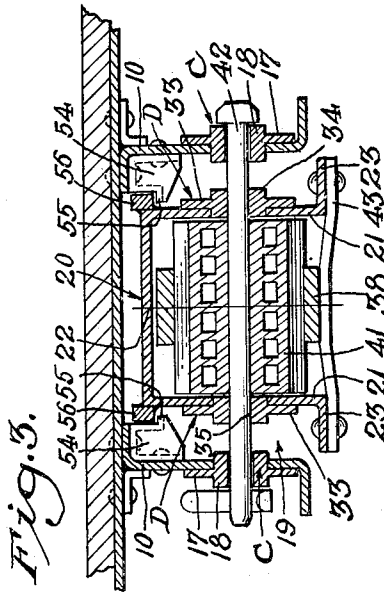
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2 Sheets-Sheet 2



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DRAFT APPLIANCE FOR RAILWAY CARS

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3 Claims. (Cl. 213—8)

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In the conventional car, the couplers are connected to the center sills or car underframe through shock absorbing devices called draft gears, each of which acts separately and independently in buff and draft and is designed to have a certain "capacity" with a definite limit of travel, for example, $2\frac{1}{2}$ ". As the limit of travel is reached, the gear goes "solid," and there is no further cushioning of the applied shock.

The principal object of this invention is to make the two draft gears, one at each end of the car, act together in cushioning a buffing shock, thereby giving twice the capacity with the same gears. Generally speaking, this is accomplished by mounting the draft gears in a floating sill structure movable relative to the car frame and connected to it through the draft gears so that a buffing shock applied to one coupler is transmitted through the corresponding draft gear to the floating sill structure and thence simultaneously through the second draft gear to the car frame. In draft, the two gears act in unison, except when the rear coupler is idle, when the corresponding draft gear is idle also.

Further objects and advantages of the invention will become apparent as the description is read in connection with the accompanying drawings, in which

Fig. 1 is a horizontal section through the sill arrangement at the left of the car embodying the present invention;

Fig. 1a is a similar horizontal section through the same sill arrangement at the right end of the car, the intermediate portion of the car between these two figures being omitted in order to conform the drawings to the required size;

Fig. 2 is a vertical section taken on the line 2—2 of Fig. 1a;

Fig. 3 is a transverse section taken on the line 3—3 of Fig. 2; and

Fig. 4 is a transverse section taken on the line 4—4 of Fig. 2.

The load carrying frame or underframe of the car includes relatively fixed draft sills 10, here shown as a pressed Z section spaced apart at each side of the center line of the car to provide a lengthwise passageway for the floating sill structure. These fixed sills 10 appear in plan section in Figs. 1 and 1a and in cross section in Figs. 3 and 4. They are connected at the two body bolsters by what will be called bolster center filler castings, generally indicated at B, which include a body center plate 11, side portions 12, and upright portions 13 by which the castings are

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framed into the body bolsters, generally indicated at 14 and made fast by rivets 15.

This frame structure corresponds generally to that used with what is known as the Duryea cushion gear (Car Builders' Encyclopedia, 1943, pp. 918-21).

Adjacent to the ends of the car, the sills 10 are slotted and fitted with cheek plates or key slot reinforcements, generally indicated by C, and comprising plates 17 and thickened ribs 18 which surround the key slot and provide extended area as a bearing for a key. The key slot reinforcements are shown welded to the sills 10.

The bolster center filler castings B and the bolster structure form recesses, generally indicated at 19, to receive a floating sill structure generally indicated at 20 (Fig. 4). This floating sill structure is here shown as including two A. A. R. Z section center sills 21 having their mating top flanges welded together at 22 by which they are formed into an inverted channel with broad bottom flanges 23 adapted to rest upon and frictionally engage the upper surfaces of the side portions 12 of the bolster center filler castings B.

This floating sill structure corresponds to the floating center sill structure used with the Duryea cushion gear, above referred to, but in this instance the spring gear interposed between the floating sill structure and the car frame has been omitted, although it is realized that some car builders will prefer not to do so.

In this instance, the two Z section center sills 21, in addition to having their top flanges welded together at 22, are firmly connected adjacent to each body bolster by a new back stop 25 having flanges 26 inserted through slots in the webs of the Z sections and welded all around, as indicated at 27. Other intermediate connections will be used or omitted according to particular conditions or individual preference.

Adjacent to their opposite ends the sills 21 are provided with a coupler carrier 28 surmounted by a wear plate 29, the coupler carriers having their end portions welded to the webs of the sills 21 adjacent to the bottom.

Extending up on each side of the sills from the bottom flanges 23 and adjacent to the coupler carrier are plates 30 (Figs. 1 and 1a) welded to the webs of the sills and extending across between the upper portions of the webs and underneath the top flanges 22 is a cross piece 31 welded in place and braced by plates 32.

All of this fabrication at the opposite ends of the floating sill structure provides what is commonly referred to as a striking plate, or striking

casting, and coupler support, and indeed some will prefer to use a casting or castings instead of the fabrication shown and described.

Instead of the single key slots adjacent to each end of the floating sill structure, as used with the Duryea cushion gear, there are here shown two key slots formed in cheek plates or key slot reinforcements generally indicated by D and comprising flat portions 33 lying against the webs of the sills 21 and thickened portions 34 extending into the slots formed in those webs. The key slot reinforcements are welded to the webs of the sills and become in effect integral parts of them.

They provide a key slot 35 aligned with the key slots in the sills 10 and other key slots 36 toward the end from the key slots 35.

Each coupler carrier 28 receives and supports the shank 37 of a coupler connected to a yoke 38 by conventional coupler key 39, which extends through the familiar slots in the coupler shank and yoke and the key slots 36 of the floating sill structure, and is there made fast by a cotter 40.

Within the yoke 38 is a selected form of draft gear, generally indicated at 40, supported with the yoke on the carrier iron 43, but as the details of this gear are a matter of choice they are omitted and reference is made to Car Builders' Encyclopedia, 1943, beginning on page 890, for general and special information with respect to the draft gears, it being contemplated that some one of the standard A. A. R. designs would be selected.

Each draft gear will be arranged between the new back stop 25 and a new follower casting 41, fitted between the floating sills 21 and within the forward portion of the yoke 38. A long special key 42 passes through this follower casting 41 and the four aligned key slots in the sills 21 and the sills 10, as best shown in Figs. 1 and 1a.

It is contemplated that the parts will be so proportioned that when assembled substantially as here illustrated the draft gears will hold the keys 42 at the outer limits of their travel in the key slots in the fixed sills 10, and the inner key slots in the floating sills 21, while the standard keys 39 will take their usual positions substantially as shown. Suitable clearances will, of course, be provided, but, generally speaking, this relationship is as illustrated.

Operation

In operation, assume a buffing shock delivered to the coupler shank 37 at the left in Fig. 1. The shank will transmit the shock to the new follower casting 41, thence to the draft gear 40, thence to the rear end of the yoke 38, thence to the new back stop 25, thence to the webs of the sills 21. Turning from Fig. 1 to Fig. 1a, it will then appear that the webs of the sills 21 will transmit that shock to the new back stop 25 toward the right end of the car, thence to the inner end of the corresponding yoke 38, thence to the right draft gear 40, thence to the new stop 41, thence to the new key 42, thence to the fixed sills 10 through the key slot reinforcements C. From this, it will appear that the two draft gears 40 act in unison and simultaneously to absorb the buffing shock applied to one of the couplers, thus giving twice the capacity with the same equipment.

Suitable limits to the lengthwise movement of the floating sill structure are provided by what are called over-solid stops 50 (Fig. 2), being plates welded in the top and bottom of the floating sills 21 in position to strike the lower edge of

the bolster center filler casting B at 51 and a cover plate 52 at 53 at or about the time that the draft gears go solid. Preferably, the travel thus limited corresponds to the travel of the draft gear, but some car builders will wish to make it a little bit less while others will wish to make it a little bit more.

The plates 52 are welded or otherwise secured to the relatively fixed sills 10 or some other part of the car underframe.

Assume a draft shock at the coupler 37 in Fig. 1 toward the left. The coupler shank moves the standard key 39 to the left, taking with it the yoke 38, and the draft gear 40 is compressed against the new follower 41, which is held against movement to the left relative to the sills 10 by the long key 42. Hence, the draft gear acts in the normal way that is customarily intended to take the draft shock.

If there is no car coupled at the right in Fig. 1a, the draft gear at that end is idle. But if there is a car coupled to the coupler 37 at the right in Fig. 1a, any shock transmitted through the sills 10 to the new key 42 will be transmitted through the new follower 41 to the draft gear 40, thence through the yoke and the standard key 39 to the draw bar 37 at the right in Fig. 1a. Thus, the draft gear 40 at the right in Fig. 1a will act in its normally intended manner.

In addition to the support for the floating sill structure afforded by the flanges 23 running on the side portions 12 of the body center filler castings B, as shown in Fig. 4, additional supports and guides are provided adjacent to each end of the car, as best shown in Figs. 2 and 3. Each sill 10 is provided with a bracket 54 riveted or welded to it and having a shoulder 55 adapted to receive and cooperate with rail sections 56 welded to the upper corners of the sills 21.

The arrangement here shown is based upon the selection of a so-called vertical yoke, but a horizontal yoke may be used, and it is thought that the details necessary to provide for that will be readily worked out by engineers without encumbering this disclosure with further illustration.

I claim:

1. In a car, fixed sills spaced apart to provide a passageway extending substantially the full length of the car and having aligned key slots adjacent to their ends, relatively movable floating sills supported by the fixed sills in the passageway between the fixed sills spaced apart to accommodate draft appliances and draft gears and having key slots normally aligned with those before mentioned and other key slots outwardly of those last mentioned, a back stop secured between the floating sills inwardly from the key slots, a yoke between the floating sills against each back stop, a draft gear in said yoke and unsecured to the floating sills, a key extending through the four aligned key slots and the yoke, a draw bar for each yoke, and a key passing through each draw bar, its yoke, and the outer key slots in the floating sills.

2. In a car, fixed sills spaced apart to provide a passageway extending substantially the full length of the car and having aligned key slots adjacent to their ends, relatively movable floating sills supported by the fixed sills in the passageway between the fixed sills spaced apart to accommodate draft appliances and draft gears and having key slots normally aligned with those before mentioned and other key slots outwardly of those last mentioned, a back stop secured between the floating sills inwardly from the key

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slots, a yoke between the floating sills against each back stop, a draft gear in said yoke, a key extending through the four aligned key slots and the yoke, a follower between the key and the draft gear, a draw bar for each yoke, and a key 5 passing through each draw bar, its yoke, and the outer key slots in the floating sills.

3. In a car, fixed sills spaced apart to provide a passageway extending substantially the full length of the car and having aligned key slots 10 adjacent to their ends, relatively movable floating sills supported by the fixed sills in the passageway between the fixed sills spaced apart to accommodate draft appliances and draft gears and having key slots normally aligned with those 15 before mentioned and other key slots outwardly of those last mentioned, a back stop secured between the floating sills inwardly from the key slots, a yoke between the floating sills against each back stop, a draft gear in said yoke and unsecured 20

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to the floating sills, a key extending through the four aligned key slots and the yoke, a draw bar for each yoke, and a key passing through each draw bar, its yoke, and the outer key slots in the floating sills, the first key normally lying in the outer portion of the key slots in the fixed sills with clearance to move corresponding to draft gear travel.

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