United States Patent

[11] 3,583,573

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[21] Appl. No. **799,337**
[22] Filed **Feb. 14, 1969**
[45] Patented **June 8, 1971**

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Chicago, Ill.

[54] **END-OF-RAILWAY-CAR CUSHIONING INSTALLATION**
2 Claims, 4 Drawing Figs.

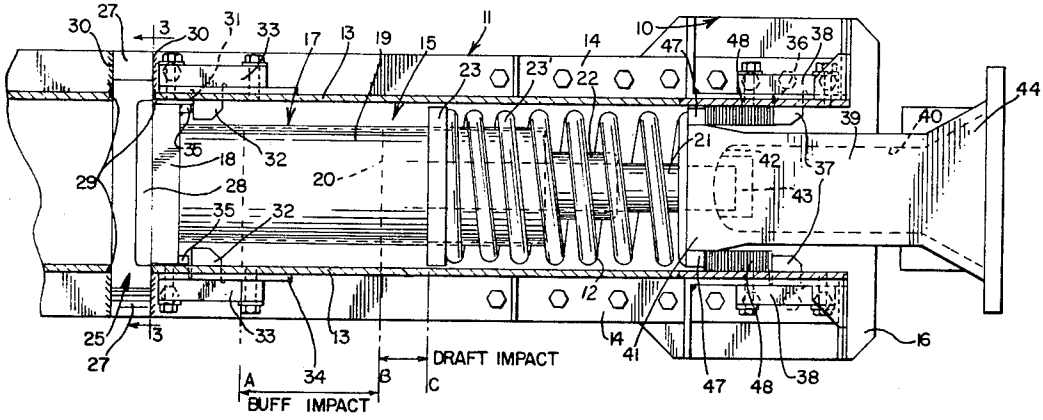
[52] **U.S. Cl.** **213/8,** 213/46;54;56
[51] **Int. Cl.** **B61g 9/02,** 9/20
[50] **Field of Search** 213/8, 43, 54, 56, 25, 46

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ABSTRACT: A railway car includes a center sill having at opposite ends thereof an end-of-car cushion installation, each including a hydraulic cushioning device having a cylinder retained in a cushion pocket by a fixed stop comprising a pair of transversely aligned apertures in a center sill with a stop block carried in said apertures and welded to said sill. The cylinder includes a base plate which is secured between said stop block and a pair of removable stop brackets on said sill. A yoke and coupler arrangement includes a laterally projecting wall which with a pair of removable stop brackets on opposite sides of the yoke forms a pair of spring pockets in which leaf springs are supported and which after a draft impact return the device to a neutral position.



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SHEET 1 OF 2

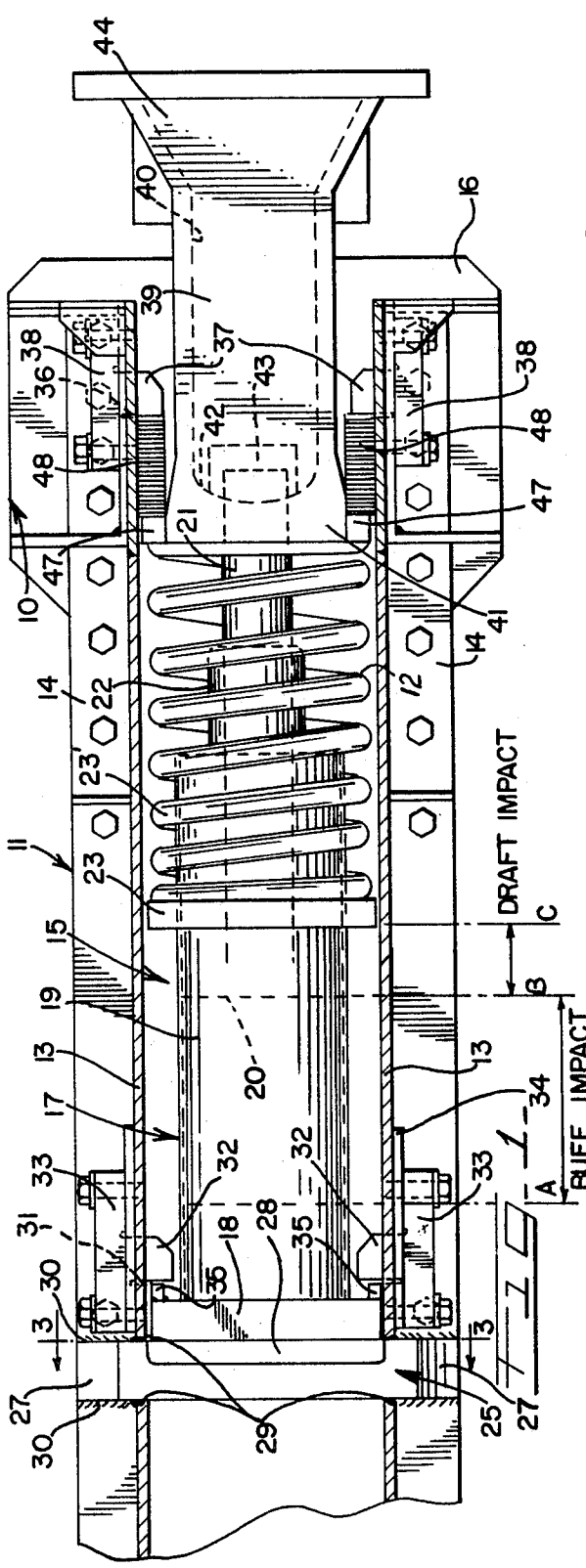


FIG. 1

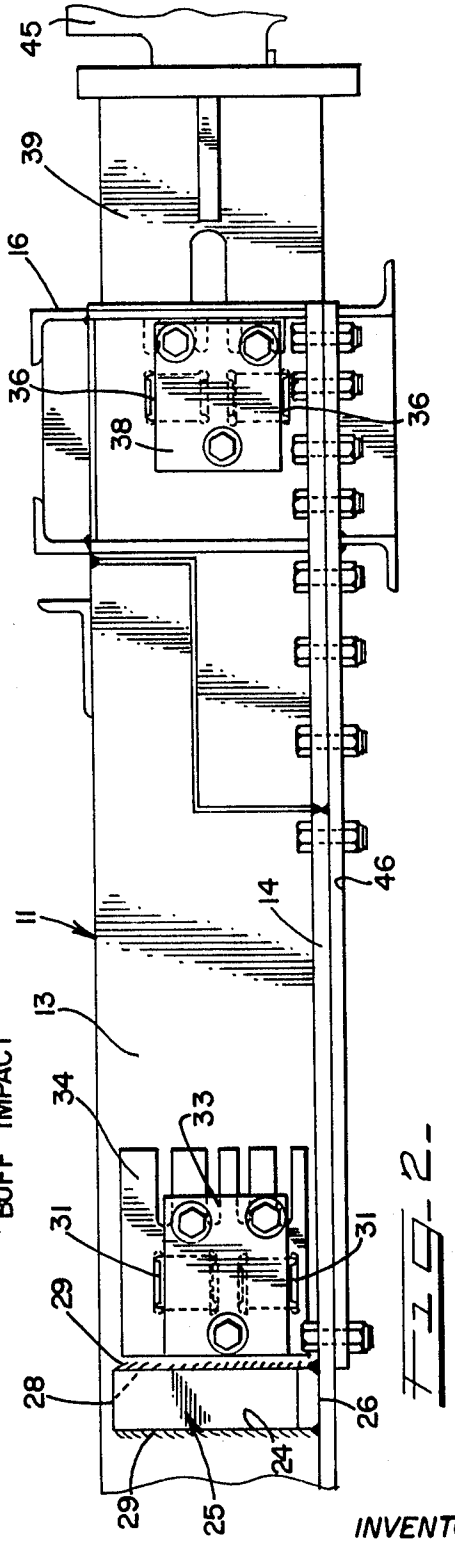


FIG. 2

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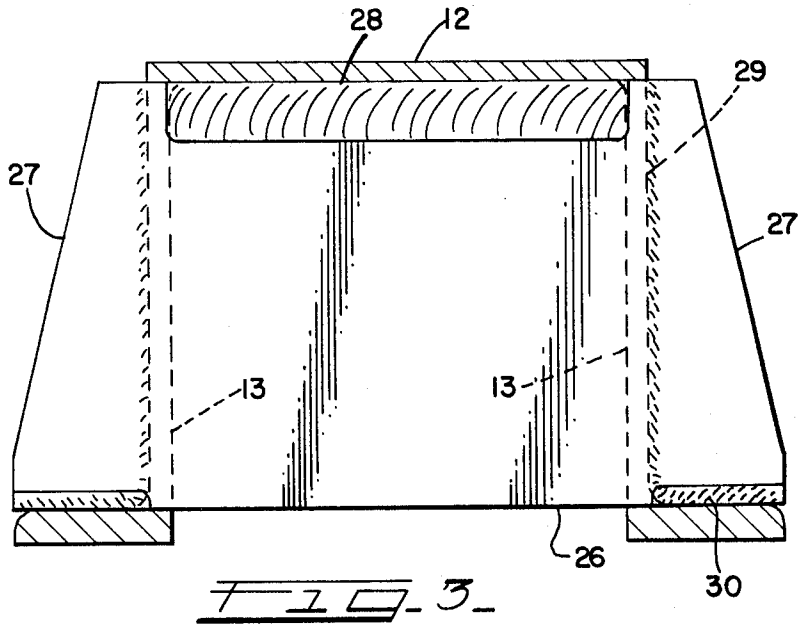


FIG. 3

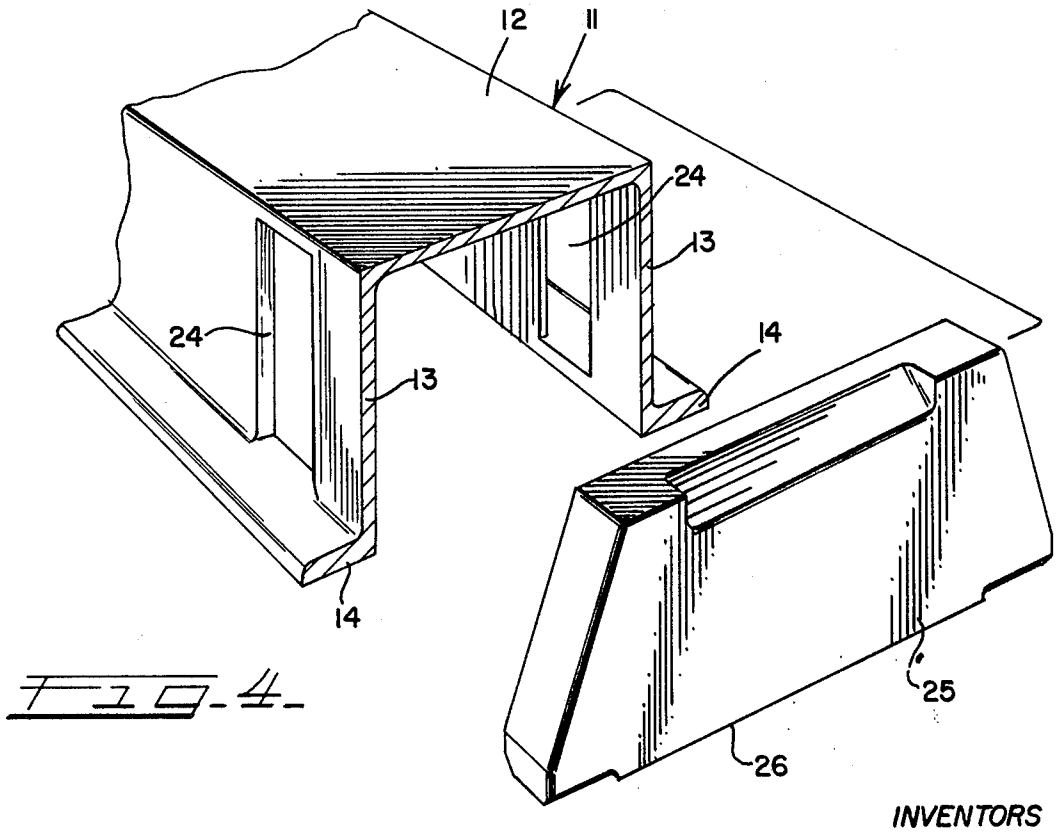


FIG. 4

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END-OF-RAILWAY-CAR CUSHIONING INSTALLATION

SUMMARY

The primary object of the present invention is to provide an improved hydraulic cushioning installation in the opposed ends of a center sill with a cushioning pocket which includes a rigid stop removed from the ends of the sill and cooperates with a plurality of removable stop brackets for securing a hydraulic cylinder and piston assembly against longitudinal movement within the pocket upon draft and buff impacts. The installation includes a rigid stop which is fixed within a pair of laterally aligned apertures disposed in longitudinally spaced relation from the ends of the center sill. The rigid stop is suitably welded to the center sill within the apertures and thus the stop arrangement permits the ready and quick adaptation of a standard center sill for end-of-car cushioning. Thus, railway cars of conventional design can be readily changed over to end-of-car cushioning since the apertures for the rigid stop are readily accomplished without removal of the center sill. Further, the cushion pocket is also provided with removable stop lugs which are inserted through apertures in the center sill which provide spring pockets on opposite sides of a longitudinally reciprocable coupler yoke.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a cross-sectional view of one end of a center sill of a railway car having an end-of-car hydraulic cushioning installation;

FIG. 2 is a side elevational view of the arrangement shown in FIG. 1;

FIG. 3 is a cross-sectional view taken substantially along the lines 3–3 of FIG. 1; and

FIG. 4 is an exploded perspective view of a portion of a center sill and a fixed cushion stop prior to assembly.

DETAILED DESCRIPTION

A railway car underframe **10** is best disclosed in FIGS. 1 and 2 and includes a center sill **11** having a top wall **12** and vertical sidewalls **13** connected thereto. The vertical walls **13** are provided at their lower ends with outwardly projecting flanges **14**. The center sill **11** is provided at each of the opposite ends with a cushion pocket generally designated at **15**. The opposite ends of the center sill **11** are also provided with reinforcing structures **16**.

A hydraulic cushioning unit **17** is disposed in a cushion pocket **15** and includes a base plate **18** connected to an open end cylinder **19**. A piston **20** is reciprocally mounted within the cylinder **19** and is connected to a piston rod **21** extending outwardly from the open end of the cylinder. The cylinder **19** is suitably sealed by a flexible boot or reservoir **22** of a type shown in the Peterson application, Ser. No. 799,175 filed Feb. 14, 1969. The cylinder **19** also is provided with a spring retainer collar **23** supporting one end of the coil spring **23'**.

As best shown in FIGS. 2 and 4, the center sill **11** at opposite ends thereof is provided with transversely aligned rectangular openings **24** within which a stop block **25** is inserted. The stop block **25** includes a bottom wall **26**, sidewalls **27** and a top wall **28**. As indicated in FIGS. 1 through 3, welds **29** and **30** suitably connect the stop block **25** within the apertures **24**.

As best shown in FIG. 1, the base plate **18** is seated against the stop block **25** and thus is maintained within the cushion pocket **15**. The center sill **11** is also provided with openings **31** on the other side of the base plate **18** through which lugs **32** project. Brackets **33** to which lugs **32** are connected are suitably supported on the vertical walls **13** with reinforcing plates **34**. The base plate **18** is also provided with longitudinally projecting lugs **25** which are disposed in slightly spaced relation relative to the lugs **32**. Thus the lugs **32** and the stop plate **28** securely position the cylinder **19** against longitudinal displacement. The forward ends of the center sill **11** are also provided with openings **36** through which lugs **37** project and which are carried on brackets **38**. The brackets **38** are also suitably removably connected to the corner sill **11**.

A coupler housing **39** is slidably disposed in the cushion pocket **15** and includes a cavity **40**. A rear wall **41** on the coupler housing **39** includes an inner concave surface **42** which supports a connector element **43** in turn connected to the end of the piston rod **21**. The coupler housing **39** includes a conventional bell-mouth **44** and a coupler **45** is suitably connected within the coupler housing **39** in conventional fashion. As best shown in FIG. 2, a bottom plate **46** is removably secured to the flanges **14** to enclose each cushion pocket **15**.

As best shown in FIG. 1 the rear wall **41** also includes projecting elements **47** and a pair of leaf springs **48** are disposed on opposite sides of the coupler housing **39** between the lugs **37** and the projecting elements **47**.

THE OPERATION

In the operation, as best shown in FIG. 1, a draft impact toward the vertical line C causes movement of the piston **20** from the neutral position as indicated by the line B whereupon the leaf springs **48** are compressed. The hydraulic operation of the cushioning device is best disclosed in the aforementioned patent application and need not be further described. After the draft impact the springs **48** return the piston **20** to the position shown by the line B. Upon a buff impact, movement of the piston **20** is in the direction of the arrow, shown in FIG. 1, to the line A from the neutral position of the line B.

The stop arrangement **25** can readily be provided in existing railroad cars in the field or in railway shops by the simple aperturing of the sides of the center sill to provide the openings **24**. Similarly, the openings **31** and **36** can likewise be created which, with the bracket arrangements, provide the desired cushioning pocket arrangement **15**. Thus the improved end-of-car cushioning arrangement can readily be accomplished with a minimum of rebuilding of the center sill or underframe of the car. After the cushioning unit has been suitably placed in position suitably placed in position the bottom plate **46** is reapplied.

What we claim is:

1. A railway car having an underframe including a center sill providing at opposite ends of the car open end cushion unit pockets, said center sill comprising a top horizontal wall and vertical sidewalls connected thereto and extending downwardly in relative inverted U-shaped configuration,

a hydraulic cushioning installation in each cushion pocket, including a cylinder having a connecting base plate at one end thereof,

a piston assembly including a piston and rod slidably disposed lengthwise in said cylinder,

a coupler housing supported for sliding movement in said pocket and connected to said rod for moving said piston assembly during buff and draft impacts lengthwise within said cylinder from a neutral position to an operative position,

said housing having a rear wall and a spring disposed between said rear wall and said cylinder,

said sill having a buff and draft force stop arrangement to provide for endwise removal of the cushion unit, piston assembly and coupler housing from the cushion pocket comprising;

means anchoring said base plate on said center sill comprising a portion of said center sill having a pair of vertically extending aligned first apertures longitudinally spaced on one transverse side of said base plate in said sidewalls,

a rigid buff stop supported in said first apertures including a vertically extending plate connected to said sill and restraining said cylinder against lengthwise movement in one direction,

said sidewalls having a pair of aligned second apertures longitudinally spaced on the opposite transverse side of said base plate, and

first removable draft stops projecting through said second apertures and restraining said base plate against movement in an opposite direction,

said sidewalls having a pair of third aligned apertures longitudinally spaced forwardly of said housing rear wall, said housing rear wall having laterally projecting abutment means, and

second removable draft stops projecting through said third apertures and in the path of movement of the abutment means for engagement of the abutment means therewith during a draft impact.

2. The invention in accordance with claim 1,

said sidewalls having lower outwardly projecting flanges, said stop plate projecting outwardly of said sidewalls and being connected along substantially the upper surface of said flanges.