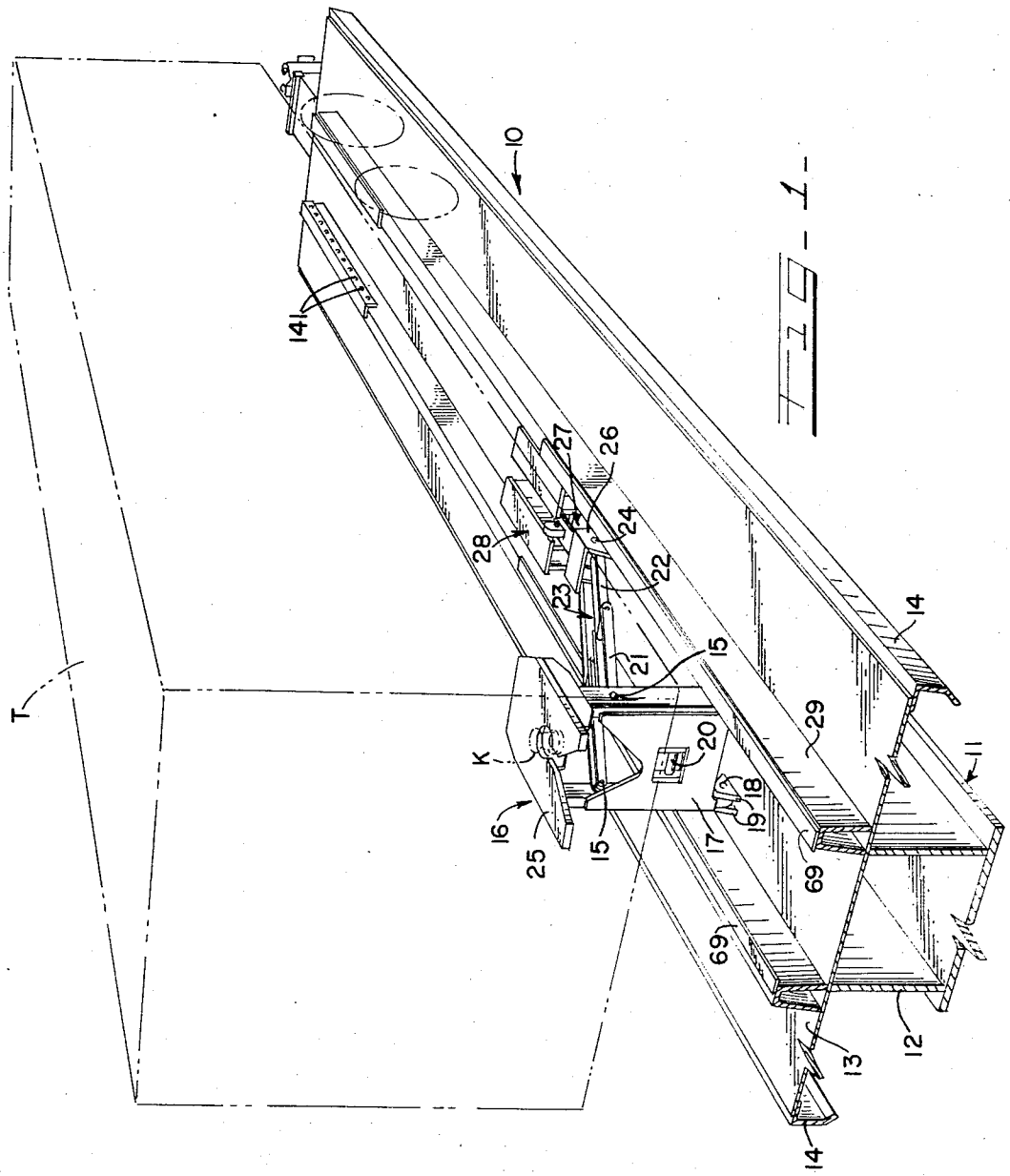
Feb. 27, 1968 J. E. GUTRIDGE ETAL 3,370,550

CONTAINER MOUNTING ARRANGEMENT FOR PIGGYBACK RAILWAY CAR

Filed Feb. 14, 1966 8 Sheets-Sheet 1

FIG - 1



INVENTORS
JACK E. GUTRIDGE
WILLIAM VAN DER SLUYS
BY Fred P. Kostka
ATT'Y.

Feb. 27, 1968 J. E. GUTRIDGE ETAL 3,370,550

CONTAINER MOUNTING ARRANGEMENT FOR PIGGYBACK RAILWAY CAR

Filed Feb. 14, 1966 8 Sheets-Sheet 2

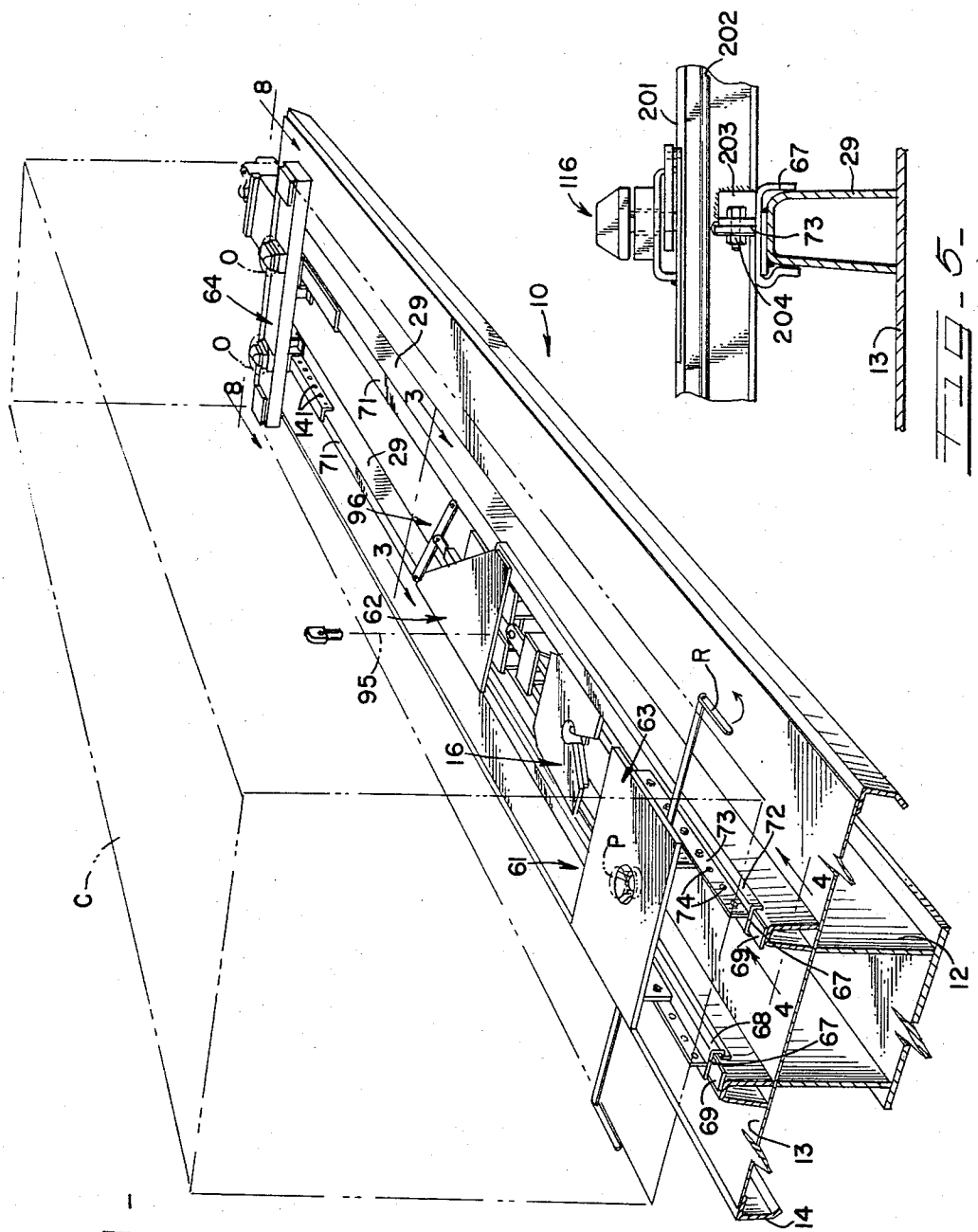


FIG-1A

FIG-5

INVENTORS
JACK E. GUTRIDGE
WILLIAM VAN DER SLUYS
BY Fred P. Fostle
ATT'Y.

Feb. 27, 1968 J. E. GUTRIDGE ETAL 3,370,550

CONTAINER MOUNTING ARRANGEMENT FOR PIGGYBACK RAILWAY CAR

Filed Feb. 14, 1966 8 Sheets-Sheet 3

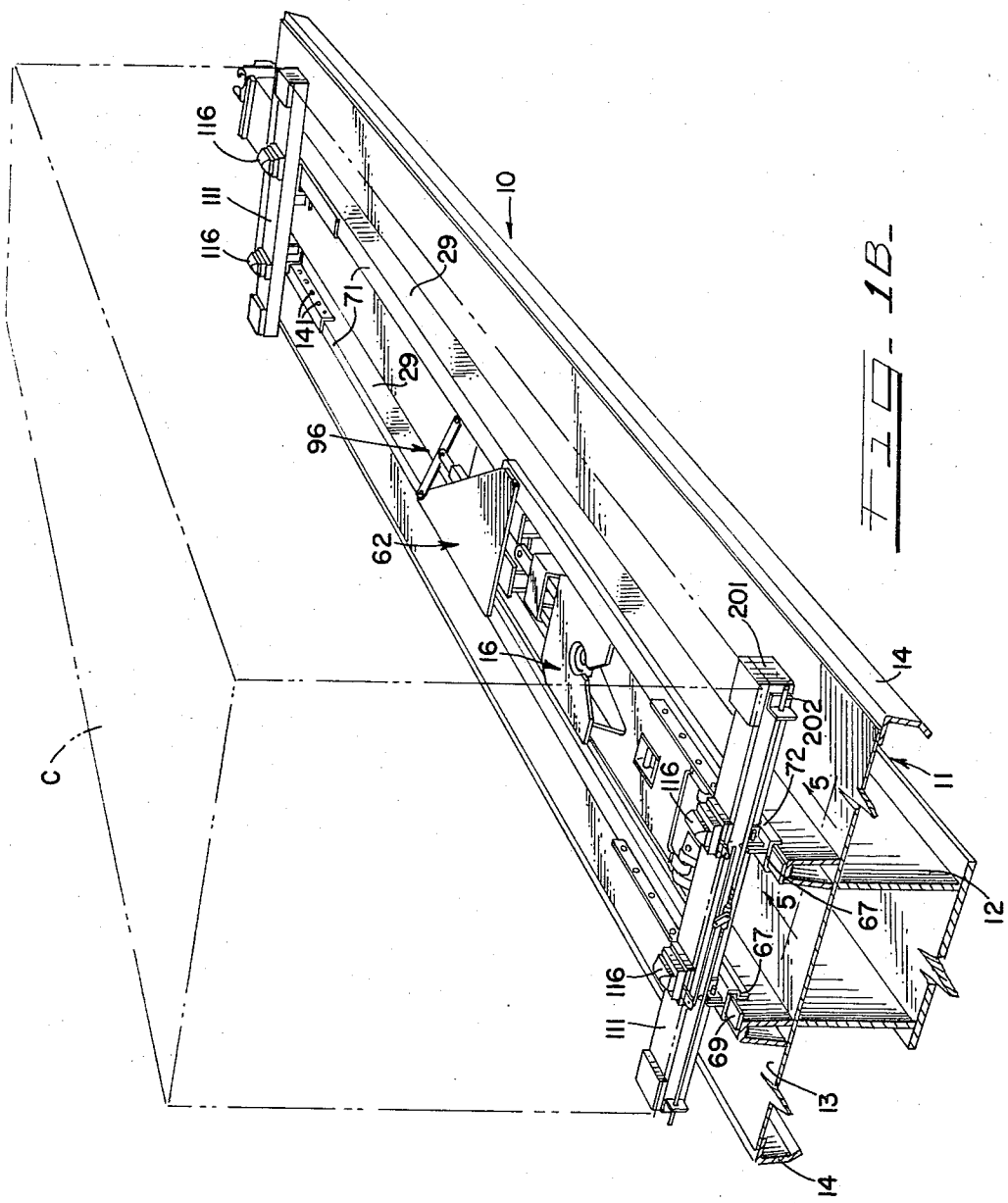


FIG. 1B

INVENTORS
JACK E. GUTRIDGE
WILLIAM VAN DER SLUYS
BY Fred P. Kostka
ATT'Y.

Feb. 27, 1968 J. E. GUTRIDGE ETAL 3,370,550

CONTAINER MOUNTING ARRANGEMENT FOR PIGGYBACK RAILWAY CAR

Filed Feb. 14, 1966 8 Sheets-Sheet 4

FIG. 3

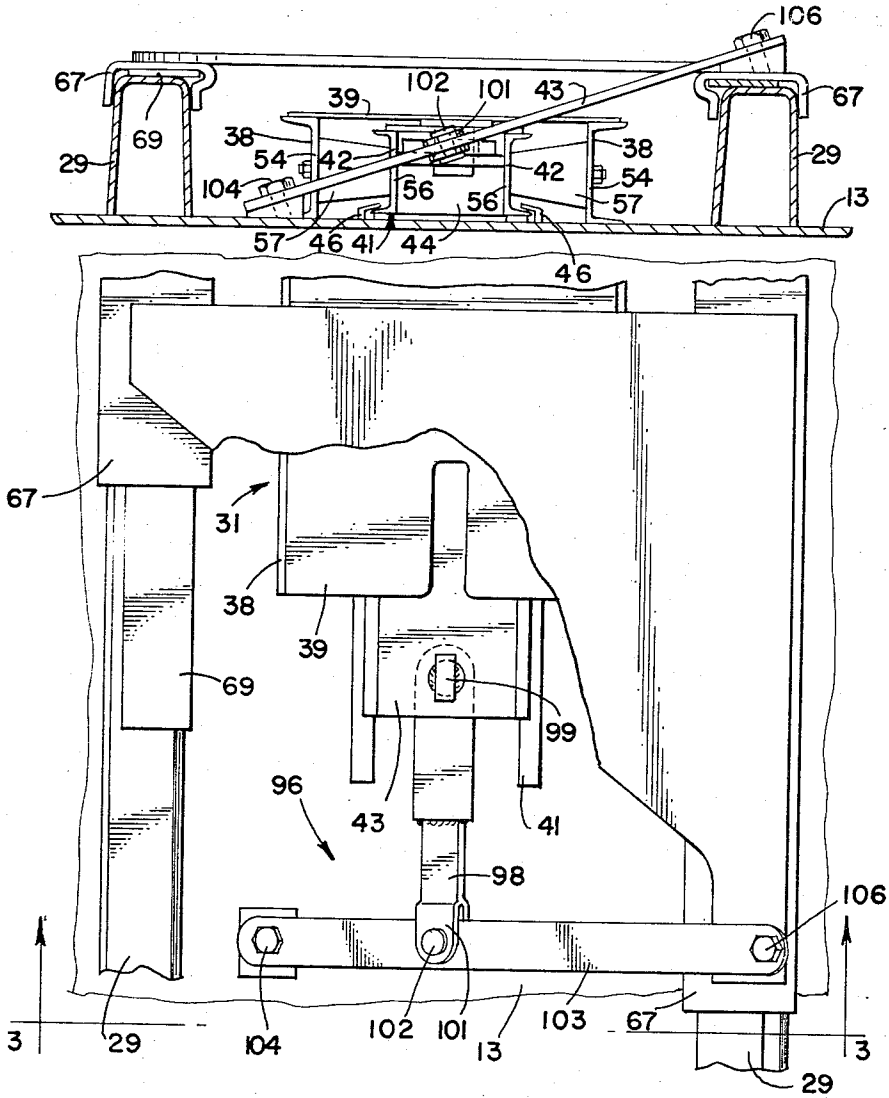


FIG. 2

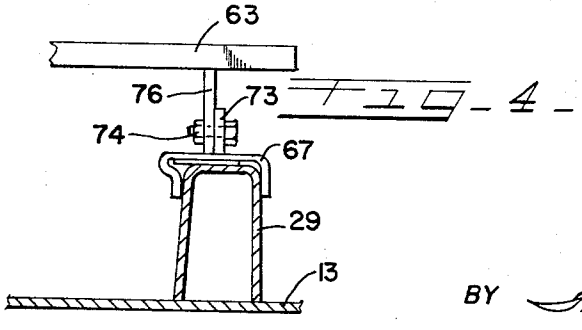


FIG. 4

INVENTORS
JACK E. GUTRIDGE
WILLIAM VAN DER SLUYS
BY Fred P. Kostka
ATT'Y.

Feb. 27, 1968 J. E. GUTRIDGE ETAL 3,370,550

CONTAINER MOUNTING ARRANGEMENT FOR PIGGYBACK RAILWAY CAR

Filed Feb. 14, 1966 8 Sheets-Sheet 5

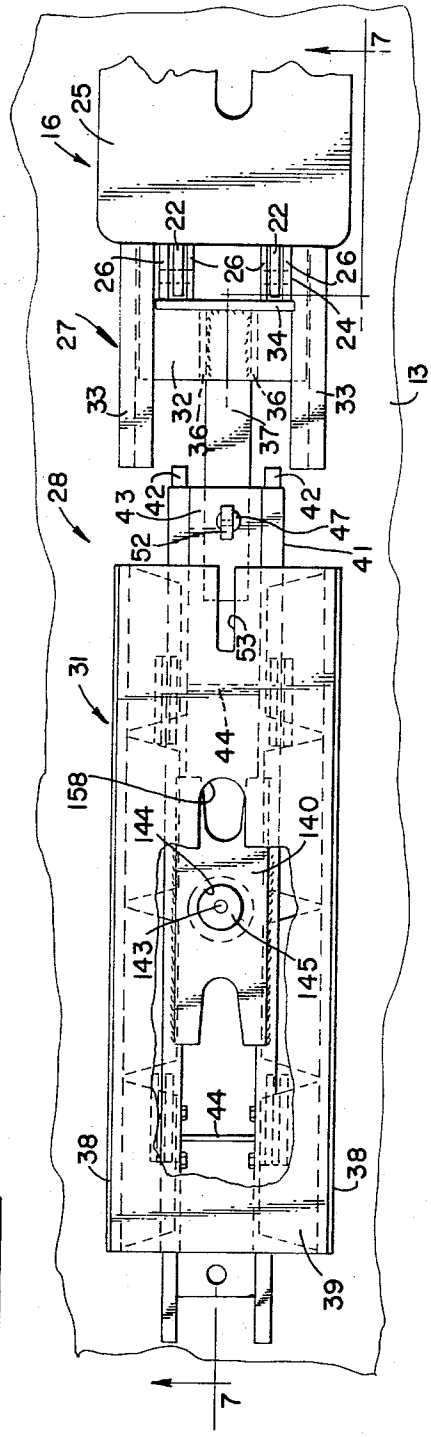


FIG. 6

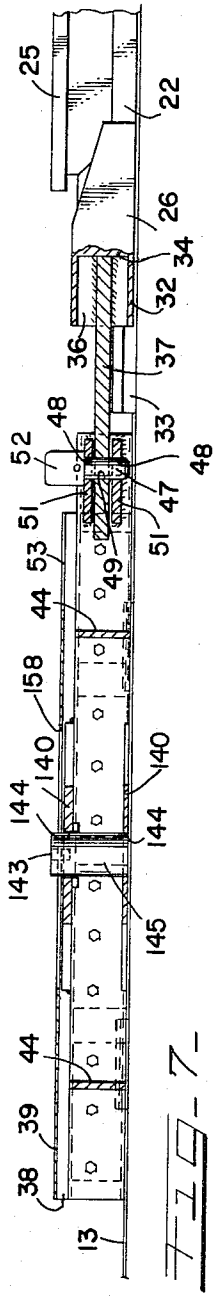


FIG. 7

INVENTORS
JACK E. GUTRIDGE
WILLIAM VAN DER SLUYS
BY Fred P. Kotler
ATT'Y.

Feb. 27, 1968 J. E. GUTRIDGE ETAL 3,370,550

CONTAINER MOUNTING ARRANGEMENT FOR PIGGYBACK RAILWAY CAR

Filed Feb. 14, 1966 8 Sheets-Sheet 6

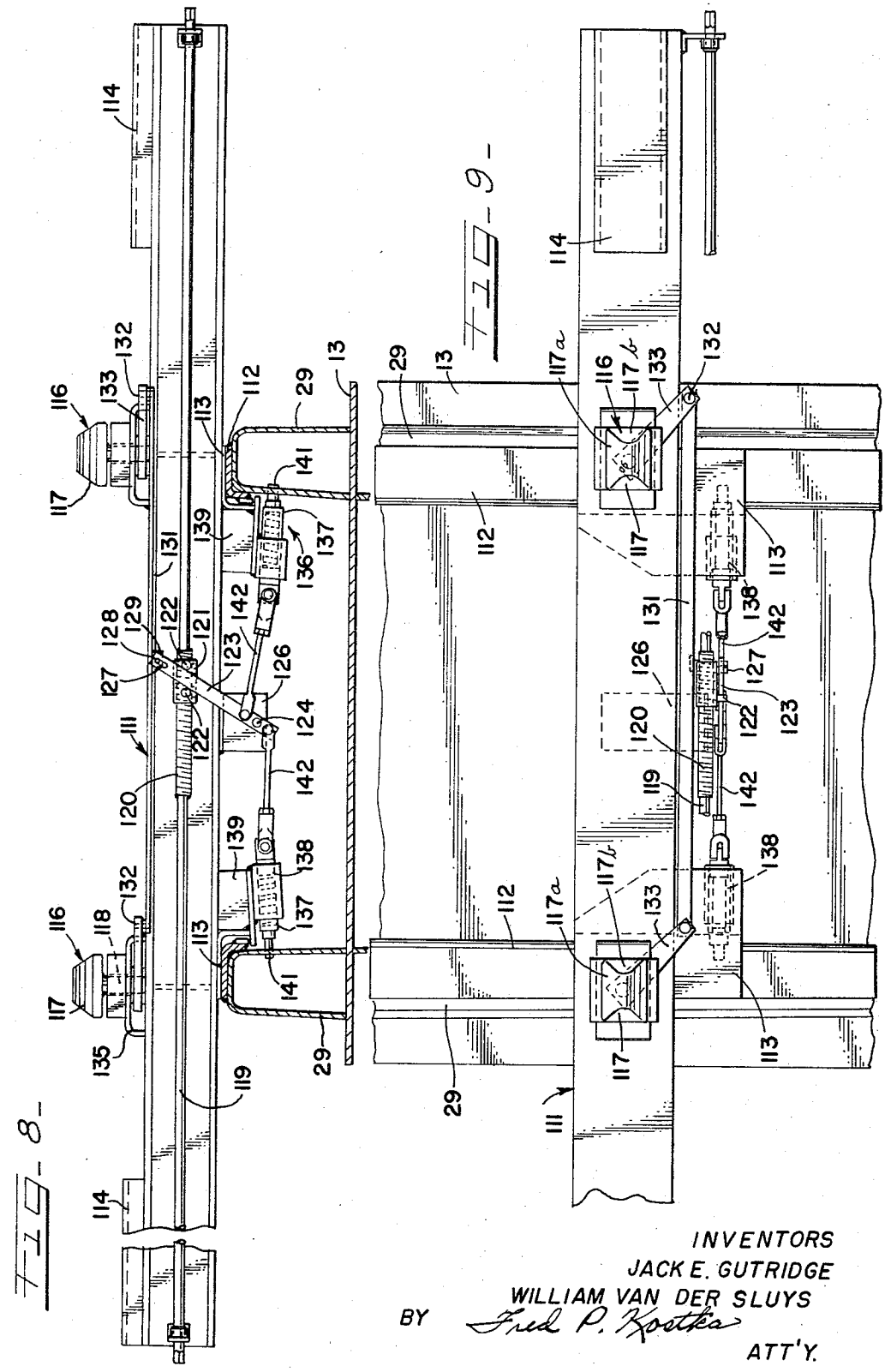


FIG. 8

FIG. 9

INVENTORS
JACK E. GUTRIDGE
WILLIAM VAN DER SLUYS
BY Fred P. Kostka
ATT'Y.

Feb. 27, 1968 J. E. GUTRIDGE ET AL 3,370,550

CONTAINER MOUNTING ARRANGEMENT FOR PIGGYBACK RAILWAY CAR

Filed Feb. 14, 1966 8 Sheets-Sheet 7

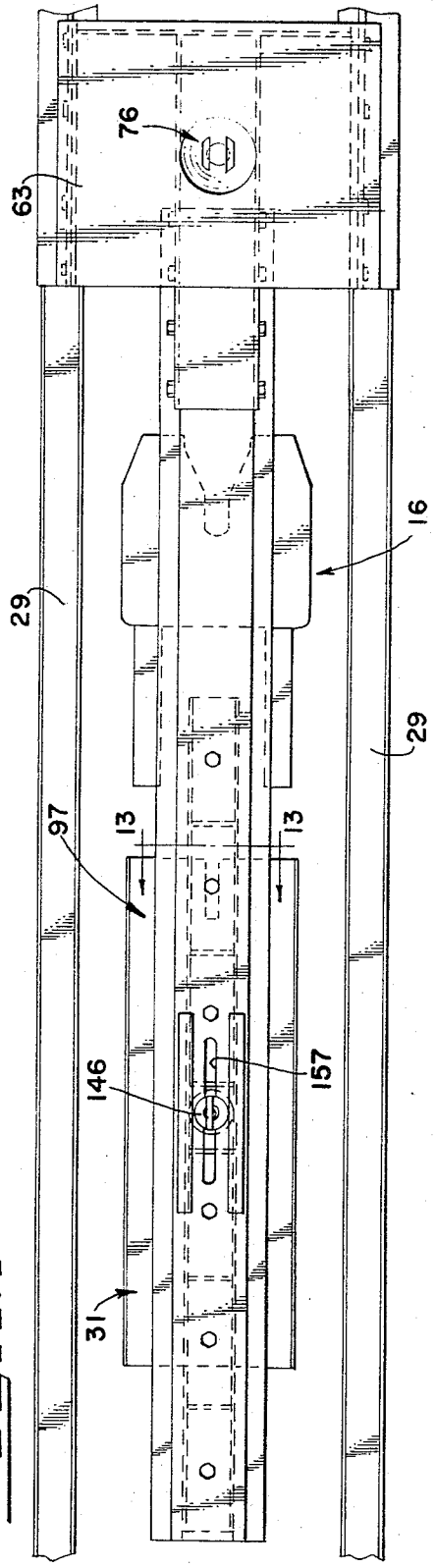


FIG. 10

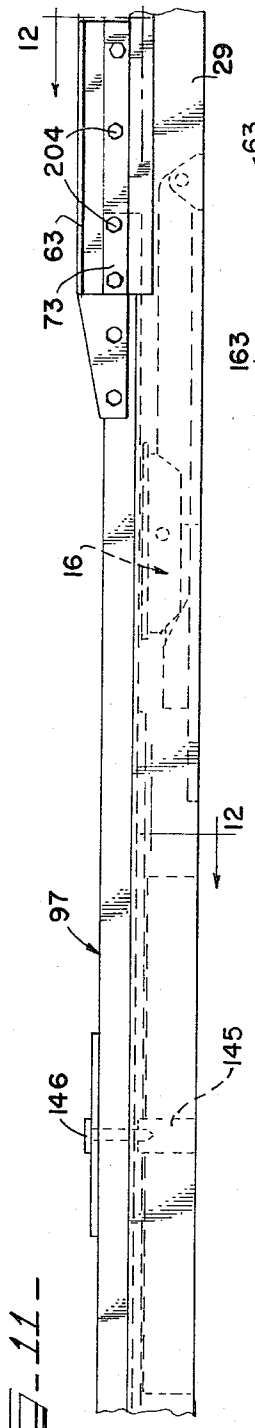


FIG. 11

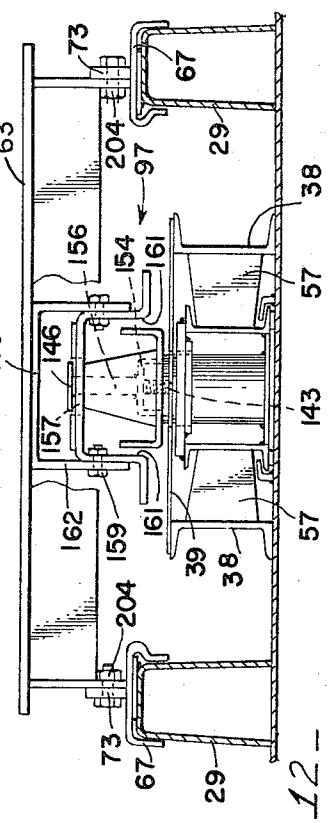


FIG. 12

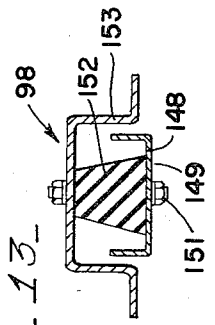


FIG. 13

INVENTORS
JACK E. GUTRIDGE
WILLIAM VAN DER SLUYS
BY Fred P. Kostka
ATT'Y.

Feb. 27, 1968 J. E. GUTRIDGE ETAL 3,370,550

CONTAINER MOUNTING ARRANGEMENT FOR PIGGYBACK RAILWAY CAR

Filed Feb. 14, 1966 8 Sheets-Sheet 8

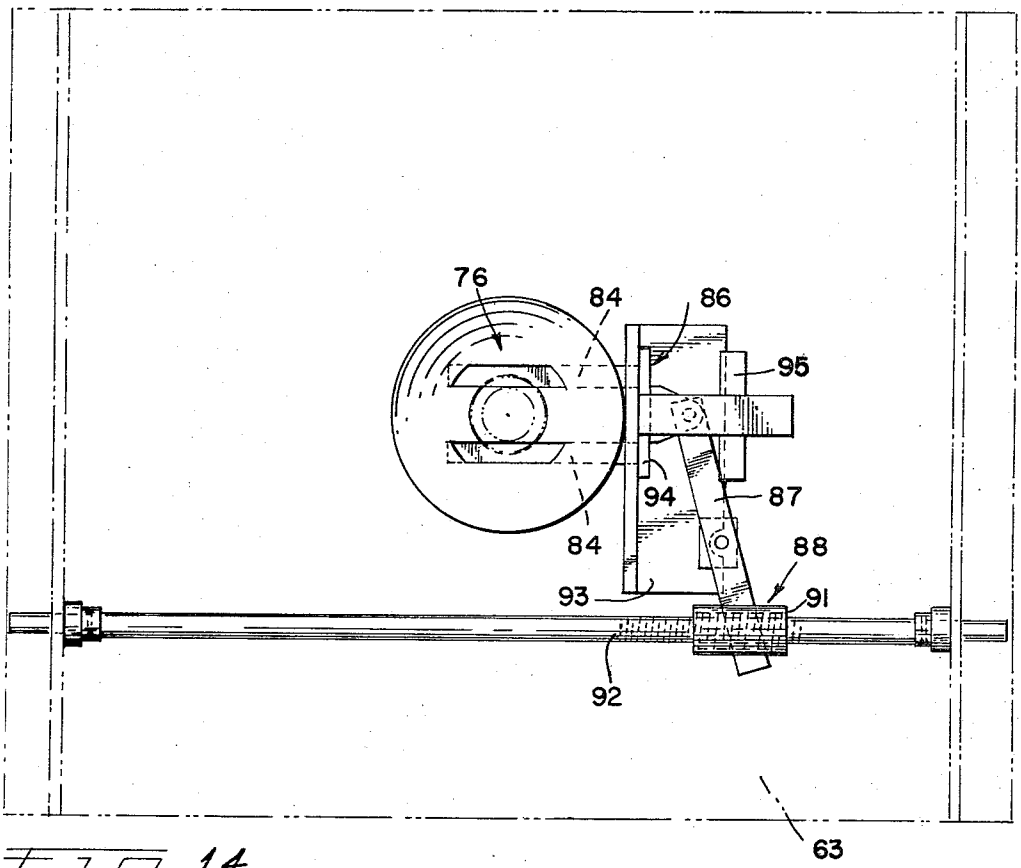


FIG. 14

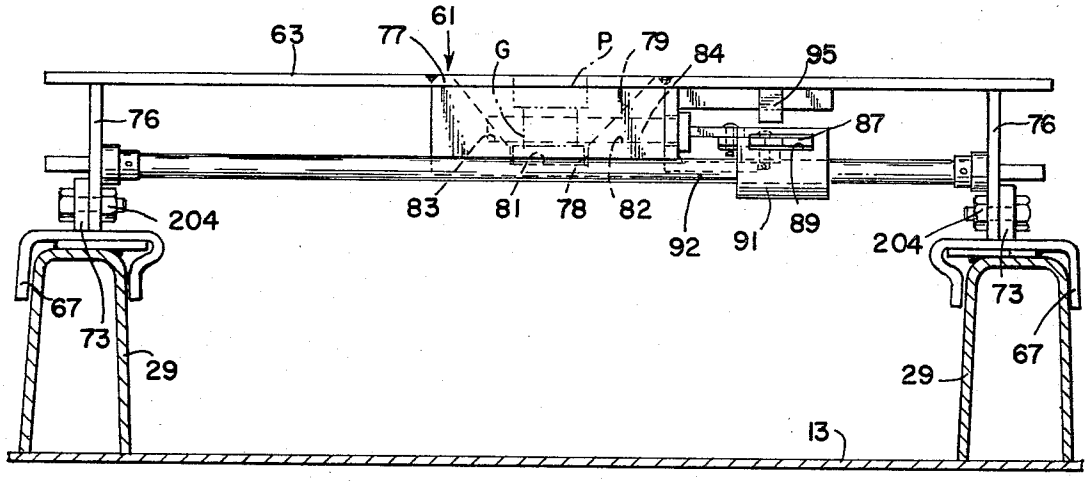


FIG. 15

INVENTORS
JACK E. GUTRIDGE
WILLIAM VAN DER SLUYS
BY Fred P. Koatka
ATT'Y.

United States Patent Office 3,370,550
Patented Feb. 27, 1968

3,370,550

CONTAINER MOUNTING ARRANGEMENT FOR PIGGYBACK RAILWAY CAR

Jack E. Gutridge, Dyer, Ind., and William Van Der Sluys, Homewood, Ill., assignors to Pullman Incorporated, Chicago, Ill., a corporation of Delaware

Filed Feb. 14, 1966, Ser. No. 527,154
12 Claims. (Cl. 105—368)

The present invention relates to railway freight vehicles of the type adapted for piggyback transporting of semi-trailers and containers and more particularly to a new and improved arrangement providing cushioned support structure for mounting and hitching semi-trailers and containers thereon.

Freight cars presently employed for piggyback operation are generally of the flat deck type having the couplers and the usual draft gear at each end thereof. These draft gears are incapable of absorbing sufficient energy of the impact applied thereto during operation so that considerable forces are imposed on the semi-trailers or containers carried on the cars. This requires that the trailer stanchions used to hitch semi-trailers on the cars be cushioned in order to provide lading protection for the lading carried by the semi-trailers. To this end the forces imposed on the trailer kingpin locked on the fifth wheel plate are maintained within tolerable limits. This is accomplished by providing the stanchion with a cushioning arrangement permitting predetermined travel of the fifth wheel plate, thereby absorbing or dissipating a portion of the forces imposed on the kingpin.

Conventionally the fifth wheel stand or stanchion includes a fifth wheel plate which is supported on a structure including a plurality of interconnected strut members which are constructed and arranged to be movable between and operative in erect position in which the semi-trailer is hitched to the stanchion and an inoperative folded collapsed position stored adjacent the floor or on the underframe of the railway car. To achieve the cushioned travel a cushioning device is associated with at least one of the struts to permit limited swinging movement or travel of the fifth wheel plate in the erect operative position of the stands.

A railway car, stanchion, and semi-trailer construction requirements and operating conditions are such as to limit the amount of cushioned travel of the fifth wheel plate. Presently, the cushioned travel of the plate is limited to between about eight to twelve inches of travel on either side of several neutral positions. While such cushioned travel is adequate for semi-trailer piggyback transportation, it is desirable that the cushioned travel for container piggyback operations be of greater length to achieve increased lading protection.

It is accordingly a principal object of the present invention to provide a flat deck railway car having a cushioned stanchion mounted thereon with a new and improved container supporting and mounting arrangement which is associated with the cushion means of the stanchion in a manner to impart cushioned travel in excess of that of the stanchion cushioning means.

It is a further object taken in conjunction with the immediately foregoing object to provide the container supporting and mounting arrangement with a cushion travel multiplying means which is connected to the

stanchion cushioning means for achieving the desired travel.

It is still a further object to provide a mechanical linkage arrangement for increasing the travel of the container cushioning arrangement.

It is another object to provide a container supporting and mounting arrangement associated with a stanchion cushioning device with a resilient cushioning arrangement connected in series with said stanchion cushioning means to increase the travel of said container supporting and mounting arrangement.

It is another object of the invention to provide a new and novel arrangement for indexing and locking a container bolster on a railway car.

Further objects and features will hereinafter appear.

In the drawings:

FIG. 1 is a perspective view of the railway car on which the present invention is adpated to be embodied and showing a stanchion in the operative position for supporting and hitching a semi-trailer on the car;

FIG. 1A is a view similar to FIG. 1, but showing one form of container mounting and hitching arrangement of the present invention is adapted to be embodied and the container mounting and hitching arrangement includes a kingpin hitching plate for locking a kingpin depending from the underside of a container and a bolster assembly;

FIG. 1B is similar to FIG. 1A but showing a further embodiment of a container mounting and hitching arrangement including a pair of bolster assemblies for mounting a container thereon;

FIG. 2 is a fragmentary top plan view of the cushion travel multiplying arrangement of the container mounting and hitching arrangement shown in FIG. 1A.

FIG. 3 is a cross sectional view taken generally along the lines 3—3 of FIG. 1A and showing the stanchion cushion device and the cushion travel multiplying arrangement;

FIG. 4 is a cross sectional view taken generally along the line 4—4 of FIG. 1A and showing the attachment of the container kingpin hitching plate to the slide member;

FIG. 5 is a cross sectional view taken generally along the line 5—5 of FIG. 1B and showing the manner in which the bolster is connected to the slide member of the container mounting arrangement;

FIG. 6 is a fragmentary top plan view of the stanchion cushion arrangement;

FIG. 7 is a cross sectional view of the stanchion cushioning arrangement taken generally along the lines 7—7 of FIG. 6;

FIG. 8 is a cross sectional view taken generally along the lines 8—8 of FIG. 1A and showing the rear bolster arrangement for mounting a container on the car;

FIG. 9 is a top plan view of the bolster arrangement shown in FIG. 8;

FIG. 10 is a top plan view of a further embodiment of a cushioned travel multiplying arrangement embodying a resilient cushion means connected in series with the stanchion cushion;

FIG. 11 is a side elevational view of the arrangement shown in FIG. 10;

FIG. 12 is a cross sectional view taken generally along the lines 12—12 of FIG. 11 and showing the manner in which the container cushion is connected in series to the stanchion cushioning device;

FIG. 13 is a cross sectional view of the travel multiplying cushion taken generally along the line 13—13 of FIG. 10;

FIG. 14 is a top plan view of the container kingpin latching mechanism with the hitching plate shown in phantom; and

FIG. 15 is a cross sectional view taken generally along the lines 15—15 of FIG. 14 and showing the details of the container kingpin latching mechanism.

Referring now to FIG. 1, there is shown a railway flatcar **10** of the type to which the present invention is adapted to be applied. As shown the flatcar **10** comprises essentially an underframe **11** including a center sill **122** formed as a box section. Fixed to the center sill **12** is a floor **13** which extends between a pair of laterally or transversely spaced side sills **14**. The side sills **14** are attached to the usual cross ties and bolsters (not shown) spaced lengthwise of and fixed to the center sill **12**. The underframe **11** is supported on the usual wheel trucks (not shown).

In the flatcar as shown there is provided a fifth wheel stand or stanchion **16** which is mounted for movement between a collapsed position adjacent the floor **13** as shown in FIGS. 1A and 1B and an operative erect position in which latter position the stanchion **16** is operative to support a semi-trailer T thereon. The semi-trailer T is hitched to the stanchion by way of a kingpin locking arrangement (not shown), which engages the kingpin K depending from the underside of the semi-trailer T.

The stanchion **16** in the embodiment as shown is of the general type shown in U.S. Patent 3,185,421 and includes a fifth wheel plate **25** mounted on an upright strut **17** pivotally connected at its lower end to the floor **13** by means of pivot pins **18** carried by trunnion brackets **19** fixed to the floor **13** of the car. Pivotally connected to the upright strut **17** as by a pin **15** is an upper diagonal strut member **21** which is pivotally connected at its lower end to a lower diagonal struct member **22**. The upper and lower diagonal struts form a diagonal strut assembly **23**. As shown the upper and lower diagonal strut members at their adjacent ends overlie each other so that in the operative erect position, as shown, a latching mechanism (not shown) serves to maintain the diagonal strut assembly **23** in its rigid linear position and thereby the stanchion in its erect position. The lower end of the lower diagonal strut **22** is pivotally connected by way of pivot pins **24** to upstanding trunnion brackets **26** fixed to a crosshead assembly **27** of a stanchion cushion arrangement **28**, which serves to reduce the forces imposed on the fifth wheel plate **25** by the kingpin depending from the semi-trailer and to provide lading protection to the lading in the semi-trailer. The maner in which the cushioning arrangement **28** operates will be more fully explained hereinafter.

In the collapsed position of the stanchion **16** as shown in FIGS. 1A and 1B, the upper and lower diagonal strut members are folded and nested within the confines of the upright strut. The erection of the stanchion is accomplished by the application of a pull-up force applied at a crossbar **20** on the upright strut **17**. Upon the application of a pull-up force to the upright strut **17**, the latter is turned about the pivots **18** to an upright position. At the same time the upper and lower diagonal strut members **21** and **22** unfold relatively to each other until they assume the rigid linear position shown. The diagonal strut latching mechanism (not shown) in this position is operative to lock the upper and lower diagonal strut members in this position and thereby retain the stanchion **16** erect. In the operative position, as heretofore explained, the kingpin depending from the underside of the semi-trailer is locked within a locking jaw carried by the fifth wheel plate **25**, whereby the semi-trailer is hitched and mounted on the railway car **10** for transit thereon.

In the railway car illustrated the fifth wheel stand or stanchion **16** is disposed between a pair of transversely spaced rail or channel members **29**, each formed from an inverted U-shaped channnel which is suitably fixed, as by welding, to the deck or floor **13** of the railway car **10**. The rails **29** are conveniently spaced so as to provide transversely spaced wheel guiding surfaces for the wheels of semi-trailers and tractors.

The cushioning arrangement **28** as shown in particular in FIGS. 2, 3, 6, and 7, comprises the cross-head assembly **27** and a cushion device **31** for providing cushioned travel of the stanchion **10**. The crosshead assembly **27** includes a crosshead plate **32** on which trunnion brackets **26** pivotally supporting the diagonal strut **23** are mounted. The crosshead plate **32** is guided for lengthwise movement by means of transversely spaced guide plates **33** fixed to the floor **13** of the car **10**. As shown in particular in FIG. 6, a transversely extending and upstanding reinforcing plate **34** is fixed to the end faces of the trunnion brackets **26**. Extending longitudinally from the reinforcing plate **34** is a pair of upstanding plates **36** between which there is fastened as by welding one end of a crosshead connecting bar **37** which at its other end is adapted to be connected to the cushioning device **31**.

The cushioning device **31** includes a pair of transversely spaced channel members **38** fixed to the floor **13**. Fixed across the upper flanges of the channels is a reinforcing cover plate **39**. Disposed between the channels **38** is a lengthwise movable cushion actuating member **41** comprising in the form as shown a pair of transversely spaced channels **42** interconnected along the upper flanges by means of a horizontal plate **43** and lengthwise spaced web plates **44**. Lengthwise spaced guides **46** overlying the bottom flanges of the channels **42** and fixed to the floor **13** serve to guide the cushion actuating channel **41** for movement lengthwise of the car. The cushion actuating member **41** as shown in FIGS. 6 and 7 is connected at its forward end to the longitudinally extending connecting bar **37** of the crosshead by means of a pin **47** which is seated in complementary openings **48** and **49** formed in a pair of transversely extending plates **51** fixed between the channel **42** and the connecting bar **37**, respectively. It is to be noted the head **52** of the pin **47** projects above the plate **39** which is formed with a slot **53** for accommodating the head during lengthwise movement of the actuating member **41**. Extending between and in the spaces between the respective vertical webs **54** and **56** of the channels **38** and the channels **42**, respectively, is a plurality of rubber pads **57** which serve to absorb or dissipate a portion of the energy of impact applied on the stanchion **16**. The rubber pad units each comprise essentially a rectangular rubber block having bonded to the outer faces thereof metallic fastening plates from which there extend bolts which are received in complementary openings formed in the respective vertical webs **54** and **56** and have nuts threaded thereon.

Upon the application of a force to the fifth wheel plate **25** as by impact applied at the coupler ends of a car causing relative movement between the semi-trailer hitched thereon and the car, the stanchion **16** tends to swing about the vertical strut **17** pivotally connected to the base by way of the pin **18** mounted on the trunnion brackets **19**. Upon such swinging movement of the vertical strut **17**, the crosshead plate **32** connected to the lower ends of the diagonal strut **23** is moved lengthwise in the direction of the force being imposed on the fifth wheel plate **25**.

Upon lengthwise movement of the crosshead plate **32**, the resilient pads affixed between the lengthwise movable cushion actuating member **41** and the stationary channels **38** are stretched longitudinally to provide shear resisting force which is imparted to the sliding crosshead and thereby to the stanchion **16**. Such a shear resisting force is operative to absorb or dissipate a portion of the energy of impact and thereby reduce the forces imposed on the kingpin K locked to the fifth wheel plate **25**.

In this connection it should be mentioned that the rubber resilient pads stretch lengthwise of the car to the

extent of their elasticity and thereby limit the cushioned travel of the fifth wheel plate. Depending upon the particular geometry of the stanchion employed, the travel of the fifth wheel plate 25 may be greater than the travel of the rubber pads 57. In the embodiment of the stanchion as shown the travel of the fifth wheel plate 25 is greater than the travel of the rubber pads 57 by approximately the ratio of the length of the upright strut between the pivots 18 and the fifth wheel plate 25 and the distance between the pivots 18 and the pivots 15. While this cushion travel of the fifth wheel plate is satisfactory for transporting semi-trailers piggyback on the railway cars, it is desirable that an increased travel be employed for the purpose of transporting containers.

As shown in FIG. 1A, the container supporting and mounting arrangement of the present invention comprises generally a container mounting and supporting assembly 61 and a cushioned travel multiplying arrangement 62 associated with the cushioning arrangement for the stanchion. The container mounting and supporting assembly 61 includes a kingpin gathering assembly 63 which serves to mount and fasten the container C by way of the kingpin K depending from the underside of the front end of a container C and a bolster assembly 64 at the rear end of the container C.

The kingpin gathering assembly 63 includes a kingpin gathering plate 66 which is mounted on a pair of transversely spaced slide members 67. The slide members are each formed as a channel, of which one of the downwardly depending legs 68 is bent inwardly to underlie a guide plate 69 fixed to the horizontal web 71 of the rails 29. The other leg 72 of the channel 67 rests against the side of the rails 29. In this manner the slide members or channels 67 are guided for lengthwise movement of the car 10. Fixed to the channels 67 are upstanding attachment plates 73 provided with a plurality of openings for receiving nut and bolt assemblies 74 for securing the kingpin gathering plate 63 thereon.

The kingpin gathering plate 63 has affixed to the underside thereof a pair of plates 76 spaced complementary to the upstanding attachment plates on the slide members 67. The plates 76 are formed with openings adapted to be aligned with the openings in the attachment plates so as to receive the nut and bolt assemblies for detachably fastening the kingpin gathering plate 63 on the slide members 67.

As shown in particular in FIGS. 14 and 15, the kingpin gathering plate 63 includes a kingpin latching device 76 comprising a rounded kingpin gathering body member 77 formed with an annular seat or pocket 78 defined by closed perimeter conical surfaces 79 and a planar abutment or floor surface 81. The body member 77 is formed with spaced openings or apertures 82 and 83 that extend axially of the kinpin pocket and through the conical guide surfaces 79 and which are adapted to receive the respective rigid locking prong members 84 of a pronged locking device 86 that is employed for the purpose of establishing space abutment or shear stress connections between the kingpin and the latch device body member over the full length of the pocket, as shown in particular in FIG. 15, and thereby to lock the kingpin P to the kingpin latching assembly.

Pivotally connected to the prong latch assembly 86 is one end of a lever 87 of an operating mechanism 88. The other end of the lever 87 is disposed in a slotted opening 89 formed in sleeve member 91 which is internally threaded and disposed on an operating screw 92 extending transversely between and supported by the downwardly depending attachment flanges 76. The lever 87 is pivotally mounted intermediate its ends on a support 93 so that upon turning movement of the operating screw 92 as by a crank R at either end thereof, the latching prongs 84 are moved inwardly or outwardly with respect to the conical kingpin pocket, thereby either to release or lock the kingpin P in position by engagement with the kingpin groove G. Limiting outward movement of the locking prongs 84 is a downwardly depending plate 95 which is adapted to engage a connecting plate 94.

In accordance with the embodiment shown generally in FIG. 1A, the slide members 67 are connected to the stanchion cushioning device 28. As heretofore explained it is desirable that the cushioned travel of the container mounting and supporting arrangement 61 be of greater length than that of the stanchion 16. To this end there may be used a mechanical travel multiplying arrangement 96 as shown in FIGS. 1A, 2 and 3, or a second resilient cushion arrangement 97 arranged in series with the stanchion cushion 31 as shown in FIGS. 10 through 12.

Referring first to the embodiment shown in FIGS. 1A, 2 and 3, the mechanical travel multiplying arrangement 96 includes a connecting arm 98 which is detachably secured as by a pin 99 to the top plate of the lengthwise movable actuating member 41 of the stanchion cushion 31. At its other end the connecting arm 98 is formed with a clevis 101 which is connected as by a pin 102 intermediate the ends of a movement multiplying lever arm 103. The lever arm 103 is pivotally connected at one end for movement about a bolt 104 detachably fastened to the floor 13. At the other end of the lever arm 103 is connected to one of the slide members 67 by a bolt 106. It is to be noted that the connecting arm 98 is pivotally connected intermediate the ends of the lever arm 103 so as to multiply the lengthwise travel of the arm 98 by the ratio of the distance between the pin 102 and bolt 104 and the distance between the bolts 104 and 106. In this manner the cushioned travel of the container mounting assembly 61 is increased to the slide members 67 on each one of the upstanding rails.

The rear container support and mounting arrangement 64 is in the form of bolster 111 as shown in particular in FIGS. 1A, 1B, 8 and 9. The bolster 111 is detachably mounted on a pair of transversely spaced rear guide angles 112 fixed on the rails 29. The rear bolster is formed of generally box-like cross section and on the underside thereof there is fixed a pair of slide angles 113 overlying the guide angles 112 so as to permit sliding lengthwise movement.

Mounted on the ends of the bolster 111 is a pair of supporting pads 114 on which the corners of the container C are adapted to rest. Located inwardly of the ends is a pair of transversely spaced indexing and locking assemblies 116 which are adapted to fit into complementary openings O formed on the underside of container C.

The indexing and locking assemblies 116 are of substantially conventional construction and are formed with a head 117 of generally rectangular contour and having tapering side surfaces 117*a* and conical end surfaces 117*b*. Depending from the underside of the head 117 is a shaft 118. The heads 117 in an indexing position are generally disposed so that the conical end surfaces 117*b* are transverse to the car for locating the container thereon. Thereafter, the locking heads 117 are turnable so that the conical surfaces 117*b* lie on the longitudinal axis, in which position the heads overlie a flange on the underside of the container C so as to hold the latter fixed on the bolster 111. The locking heads 117 are actuated by a common operating shaft 119 turnably supported along the side of the bolster 111. The shaft 119 is formed with threaded portion 120 intermediate its ends. Turnably and threadably mounted on the threaded portion of the shaft is a sleeve member 121. Extending outwardly from the sleeve member 121 is a pair of pins 122 between which there is disposed one end of an actuating lever 123 which is pivotally connected by a pivot pin 124 to a bracket 126 fixed to the underside of the bolster 111. At its upper end the lever is formed with a slot 127 which receives a pin 128 carried by a bracket 129 fixed intermediate the ends of a lever 131. The lever 131 has connected to each of its ends by way of pivot pins 132 one end of a turning arm 133. The other ends of each of the turning arms 133 are connected to shaft 118 which are supported in a suitable mounting bracket 135 fixed to the bolster 111.

From the foregoing description it should be readily apparent that upon turning of the operating shaft **119** as by a wrench or the like attachable to the ends R, the sleeve **121** is turned so as to rock the actuating lever **123** about the pivot **124**, whereupon the slotted end accommodating the pin **128** on the lever **131** is operative to move the latter transversely of the car. Upon transverse movement of the lever **131**, the turning arms **133** are operative to turn indexing heads **117** to either the indexing position or locked positions.

As is well known, the lengthwise distance between the kingpin P and the indexing and locking openings O on the underside of the container are fixed. Thus, when the container C is to be located on the car the bolster **111** and the locking jaw plate **63** must be spaced a corresponding distance. At the same time the bolster **111** must be fixed on the car against lengthwise movement so as to properly index the container C thereon.

In accordance with the present invention there is provided a bolster latching or locking means **136** which is associated with the indexing and locking head operating arrangement. The bolster locking arrangement **136** comprises a pair of spring biased plungers **137** which are slidably mounted in respective sleeves **138** carried on the underside of a bracket **113** which is fixed to the bolster **111**. The locking plungers **137** are adapted to enter selective ones of a plurality of openings **141** formed on the inner leg of the rails **29**.

In the position as shown, the bolster locking plungers **137** are engaged within one pair of openings **141** to hold the bolsters against endwise movement. To permit lengthwise movement of the bolster **111** each of the locking plungers **137** is connected to a respective retracting lever **142**. The retracting levers **142** are each also connected to the actuating lever **123** so that upon movement of the actuating lever **123** from the indexing position of the locking heads to the locked position of the latter, the locking plungers **137** are retracted out of engagement with the openings **141**. Thus, it should be readily apparent that after the container has been indexed on the container supporting and mounting arrangement and the locking and indexing heads have been turned to their container locked position, that the locking plungers **137** are simultaneously disengaged or retracted from the openings. Thus, the rear bolster is free for sliding movement lengthwise of the car on the rails **29**. It is to be noted that in the embodiment of the invention shown the rear bolster **111** is merely frictionally slidable lengthwise of the car and is not connected to the cushioning arrangement **28** as is the front kingpin gathering plate assembly **63**.

The container mounting and supporting arrangement including the kingpin gathering plate assembly and the rear bolsters **63** and **64**, respectively are applied to the railway car **10** when the stanchion **16** is in the collapsed position shown. The gathering plate assembly is mounted with the slide members **67** supported on the rails **29**. The travel multiplying arrangement **96** connected to the rear end of the slide members **67** is attached to the car by fastening the lever **103** to the floor **13** with the bolt **104**, and the connecting arm **98** attached to the lever **103** is connected to the stanchion cushioning device **41** by way of the insertion of the pin **99**. Also the stanchion **16** is disconnected from the cushion stanchion **31** by the removal of the pin **47** from the crosshead assembly **27**. Thus, the stanchion **16** is completely disconnected from the stanchion cushion unit **41** and the latter is operative solely to provide cushion travel of the kingpin gathering plate assembly **63**.

The rear bolster **111** is positioned on the rails **29** and locked in position until the container C is positioned thereon. Thereafter when the heads **117** are turned to the locked position, the bolster **111** is free to move lengthwise of the car with the container. Also the container kingpin P is locked to the assembly **61** as heretofore explained.

Assuming now the application of a force on the end of the couplers the container C mounted on the kingpin gathering arrangement **63** and the bolster **111** tend to move lengthwise relative to the car. Such movement is resisted by way of the kingpin gathering assembly **63** being connected to the stanchion cushioning device **41** through the connection of the slide members **67** and the travel multiplying leverage **103** and **98** as heretofore explained. Thus, the relative movement of the front end of the container is resisted by the length of travel of the cushioning device **43** as multiplied by the lever arrangement **98–103**. In this manner the container C is cushioned against impact by the cushioning device **28**.

At the same time the rear end of the container C mounted on the bolster C moves lengthwise to the extent of travel of the cushioning device **28** and the travel multiplying arrangement **96**. However the bolster **111** is not connected to the cushion device such that the frictional force between the slide angles **113** and the guide angles **112** mounted on the rails **29** is also available to resist the relative movement of the container C and thereby provide a further reduction in the impact energy imposed on the lading carried in the container.

Referring now in particular to FIGS. 10 through 13 there is shown the resilient travelling multiplying cushioning arrangement **97** which is connectable to the stanchion cushion device **31**. For making the connection between the cushioning arrangement **97** and the stanchion cushion device **31** are a pair of vertically spaced plates **140** connected across the two channels **42** of the stanchion cushion device **31**. Supported by and fixed to the plates **140** is a column **145** which extends through an opening **144** in the upper one of the plates **140** and has a threaded axial opening **143**. The threaded opening **143** is adapted to receive a connecting screw **146**, as more fully to be described hereinafter.

As shown in FIGS. 13 and 14 the resilient travel multiplying cushioning arrangement **97** includes a lower channel member **148** of substantially U-shaped cross section. Fixed to the horizontal web **149** of the channel **148** as by bolts and nuts **151** is one side of each of a plurality of rubber cushioning pads **152**. The rubber cushioning pads **152** may be of similar construction to the rubber pad **57** of the stanchion cushioning device **31**. Fixed to the opposite side or face of each of the rubber cushion pads **152** as by bolts and nuts **151** is a channel **153** of substantially hat shaped section.

Mounted on the horizontal web **149** of the channel **148** is an inverted U-shaped supporting bracket **154** having an opening which receives a shank **156** of the connecting screw **146**. The lower end of the shank **156** is threaded and adapted to be inserted into the threaded opening **143** of the column **145** fixed to the stanchion cushion actuating member **41**. The shank **156** of the connecting screw **146** is accommodated within elongated slot **157** to permit relative movement between the channel member **148** and the hat shaped member **153**. It is to be noted that the upper end of the column **145** extends through a longitudinal elongate slot **158** formed in the plate **39** extending between the stationary channel members **38** of the stanchion cushion device **31**.

The hat shaped channel **153** is connected as shown in particular in FIGS. 10 and 12 to the container kingpin gathering plate **63**. The connection is accomplished by way of nuts and bolts **159** connecting the vertical flanges **161** of the hat shaped channel **153** to downwardly depending legs **162** of a bracket **163** fixed to the kingpin gathering plate **63**.

From the foregoing it should be apparent that the kingpin gathering plate assembly **63** and the resilient cushion travel multiplying arrangement **97** may be mounted on the car as a unit. This is accomplished by mounting the slide members **67** on the rails **29** and attaching the cushion travel multiplying arrangement **97** to the stanchion cushion device **31** by way of the attachment pin **146**. In this connection it is to be noted that the pin **47** connecting the stanchion cushion **31** to the crosshead plate **32**

connecting bar **37** projects above the plate **39** and the column **142** so that it is essential that the pin **47** with projecting head **52** be removed before the resilient cushion travel multiplying arrangement can be attached to the stanchion cushion device **31**. In this manner the pin **47** serves as a safeguard to prevent simultaneous attachment of the stanchion **16** and the kingpin gathering plate **63** to the stanchion cushion **31**.

Assuming now that a container C is mounted on the kingpin gathering plate assembly **63** and the bolster **111** and an impact is applied on the ends of the car **10** such that there is relative movement of the container C and the car, the container gathering plate assembly **63** slides lengthwise of the car in the direction of the force causing the connecting bracket **163** and the hat shaped channel **153** affixed thereto to be moved in the same direction. This movement causes the rubber pads **152** fixed to the hat shaped channel **153** and to the channel **149** to be extended in shear in the direction of the application of the force. The extension of the pads **152** occurs in the shear plane of the faces of the rubber pads so as to provide a shear resisting force. As the rubber pads **152** extend in the shear plane, the lower channel **149** which is connected to the stanchion actuating member **41** also moves in the same direction, whereupon the rubber pads **57** fixed to the channel **38** are also extended in a shear plane. The resilient cushion device **97** and the stanchion cushion thereby function similarly to two springs connected in series. Thus, the cushion travel of the kingpin gathering plate assembly is the sum of the travel of the pads **152** and the pads **57**.

The foregoing descriptions of the container mounting arrangements have each been in connection with a kingpin gathering and latching assembly **61** and a bolster **111**. In the embodiment shown in FIGS. 1B and 5 there is shown a bolster **201** connected to the slide channels **67**. The bolster **201** is of similar construction to the bolster **111** and includes the indexing and fastening heads **116** rotatably mounted thereon for engagement with openings O formed in the forward end of the container.

The indexing and locking heads **116** are operated by an operating assembly **202** similar to that described in connection with the bolster **111** but differing therefrom in that the latching means for holding the bolster **201** against lengthwise movement are eliminated. Such latching means, of course, are not necessary because the bolster **201** is held located by way of the connections to the stanchion cushion **31** and the travel multiplying arrangements.

As shown in FIG. 5, there is fixed to the bolster **201** attachment angle plates **203** arranged to abut against the upstanding attachment plates **73** slide channels **67**. Fastening the angle plates **203** to the attachment plates **73** are bolts and nuts **204**. Thus, it is readily apparent that the bolster **201** may replace the kingpin plate **63** if the mounting structure of the container C is of the type which does not include a kingpin. Of course, the cushion travel of the bolster **201** will be the same as described above in the embodiment generally illustrated in FIG. 1A.

What is claimed is:

1. A railway car comprising an underframe, a collapsible stanchion including a plurality of strut members mounted on said underframe for movement between an erect operative trailer supporting and hitching position and a collapsed position on said underframe, container supporting and mounting means supported on said underframe for lengthwise movement thereof, cushioning means having a predetermined lengthwise travel mounted on said underframe, means for detachably connecting said cushioning means to at least one of said strut members of said stanchion so as to cushion said stanchion in the operative position thereof, cushion travel multiplying means connectible between said cushioning means and said container supporting and mounting means when said stanchion is detached from said cushion means for imparting a greater cushion travel to said container supporting means.

2. The invention as defined in claim **1** wherein said cushion travel multiplying means comprises a mechanical linkage arranged to increase the length of travel from the connection to said cushioning means, and the connection to said container mounting and supporting means.

3. The invention as defined in claim **2** wherein said mechanical linkage includes a connecting arm connected to said cushioning means for lengthwise movement therewith, and a lever pivotally connected at one end of said underframe and at the other end to said container mounting and supporting means, said connecting arm being connected to said lever intermediate the ends thereof thereby to multiply the lengthwise travel of said cushion means by the ratio of the distance between the connections to said underframe and said container mounting means to the distance between the point of connection of the connecting arm to said lever and the connection of the latter to said container mounting and supporting means.

4. The invention as defined in claim **1** wherein said travel multiplying means comprises a second lengthwise movable cushioning means connected in series with said cushioning means and connected to said container supporting and mounting means.

5. The invention as defined in claim **1** wherein said cushioning means comprises resilient means providing a resisting force upon shear extension of said resilient means.

6. The invention as defined in claim **5** wherein said cushioning means and said second cushion connected in series with said cushioning means each include resilient means providing a resisting force upon shear extension of said resilient means.

7. The invention as defined in claim **1** wherein said container supporting and mounting arrangement includes a first support means for mounting and supporting one end of a container and a second support means for supporting the other end of the container, said first support means being separate from said second support means; and wherein said first support means is detachably connected to said cushioning means.

8. The invention as defined in claim **7** wherein said cushion travel multiplying means comprises a mechanical linkage arranged to increase the length of travel from the connection to said cushioning means, and the connection to said container mounting and supporting means.

9. The invention as defined in claim **7** wherein said travel multiplying means comprises a second lengthwise movable cushioning means connected in series with said cushioning means and connected to said container supporting and mounting means.

10. The invention as defined in claim **7** wherein said cushioning means comprises resilient means providing a resisting force upon shear extension of said resilient means.

11. The invention as defined in claim **7** wherein said cushioning means and said second cushion connected in series with said cushioning means each includes resilient means providing a resisting force upon shear extension of said resilient means.

12. In a railway car having an underframe, a container supporting and mounting arrangement including a first container supporting and mounting means for supporting and mounting one end of a container on said car, a second container supporting and mounting means for supporting and mounting the opposite end of said container and being separate from said first container mounting and supporting means, means guiding first and second said container mounting and supporting means for lengthwise movement of said car, at least one of said first and second container supporting means being in the form of a bolster having transversely spaced rotatable indexing and locking heads mounted thereon for engagement with openings in the underside of a container, operating means

on said bolster for turning said rotatable indexing and locking heads from an indexing position to a locked position, means on said bolster for locking said bolster against lengthwise movement of said car a predetermined lengthwise distance from the other of said container mounting and supporting means during indexing of the container on said car, said indexing and locking head operating means including means for releasing said bolster for

lengthwise movement when said heads are turned from said indexing to said container locking position.

No references cited.

ARTHUR L. LA POINT, *Primary Examiner.*

D. E. HOFFMAN, *Assistant Examiner.*