Dec. 29, 1964 J. E. GUTRIDGE ETAL 3,163,127

CUSHION CONTAINER SUPPORT PLATFORM FOR RAILROAD FLATCARS

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Fig. 2.

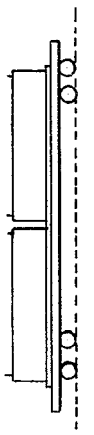

Fig. 3.

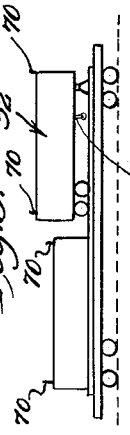

Fig. 1.

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Dec. 29, 1964 J. E. GUTRIDGE ETAL 3,163,127

CUSHION CONTAINER SUPPORT PLATFORM FOR RAILROAD FLATCARS

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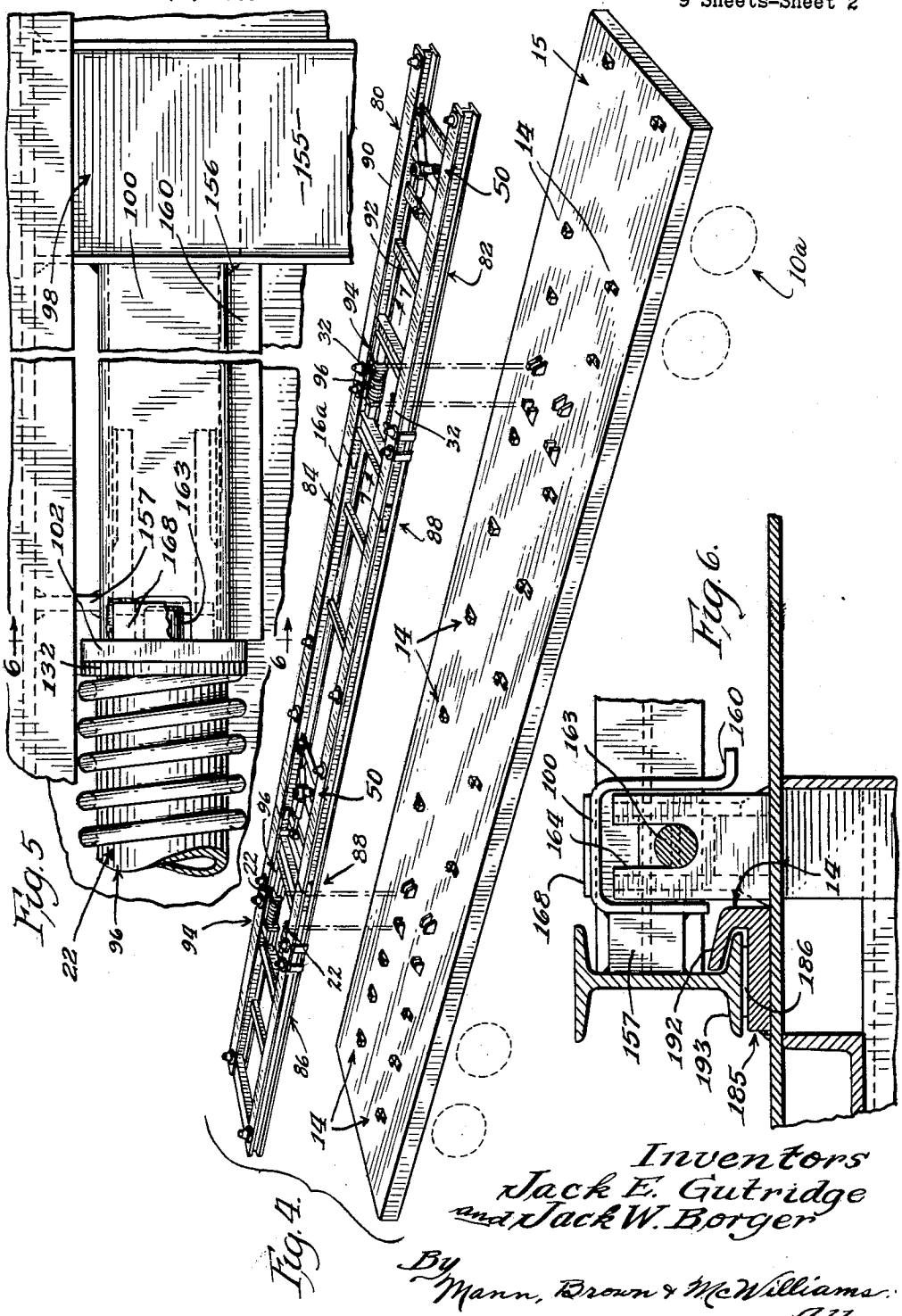

Dec. 29, 1964 J. E. GUTRIDGE ETAL 3,163,127

CUSHION CONTAINER SUPPORT PLATFORM FOR RAILROAD FLATCARS

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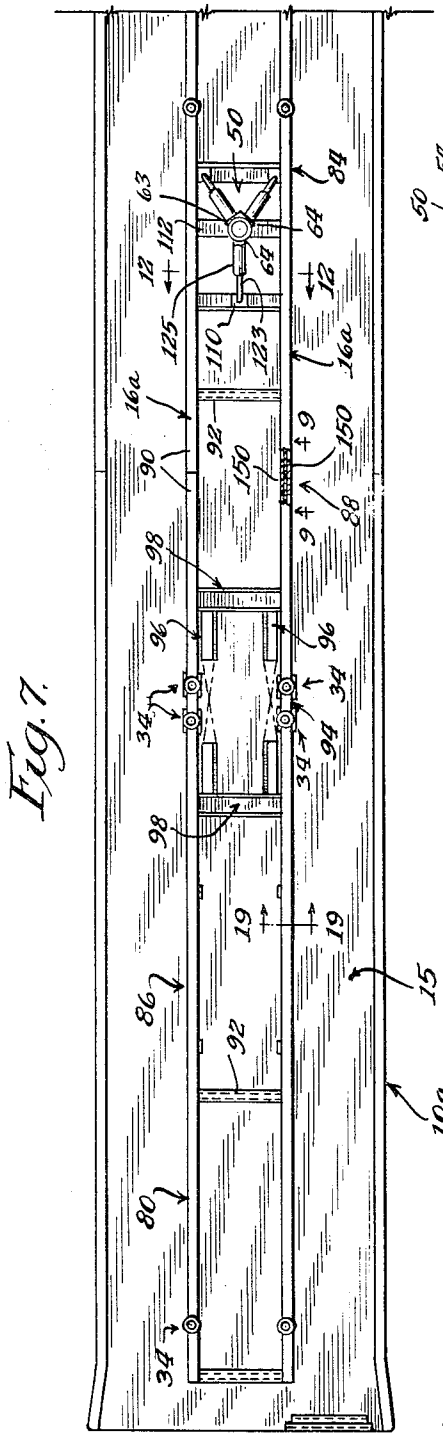

Fig. 7.

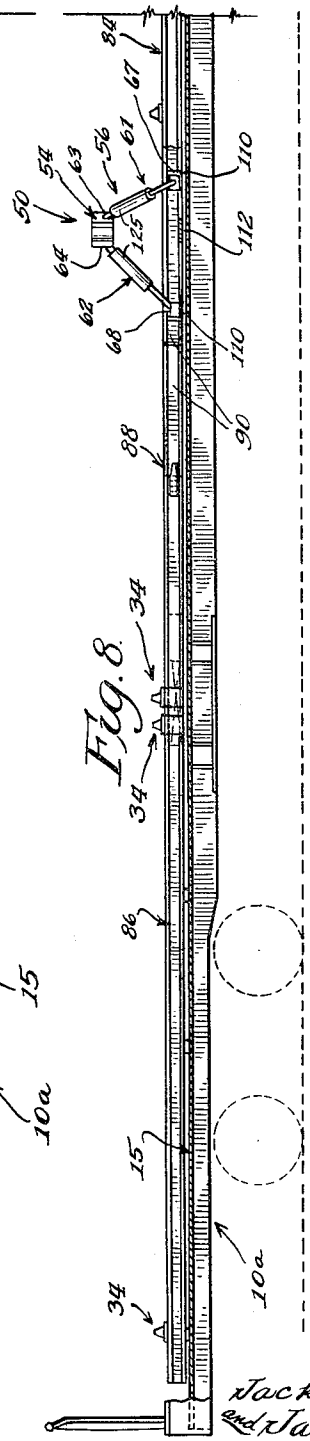

Fig. 8.

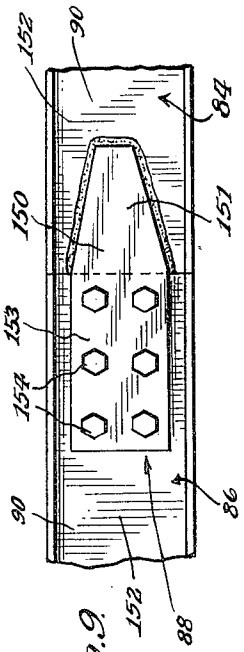

Fig. 9.

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CUSHION CONTAINER SUPPORT PLATFORM FOR RAILROAD FLATCARS

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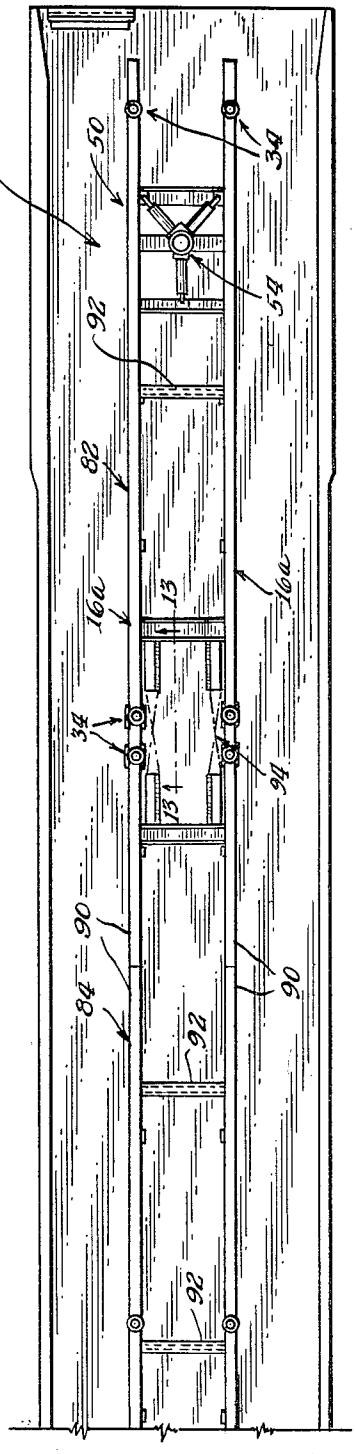

Fig. 10.

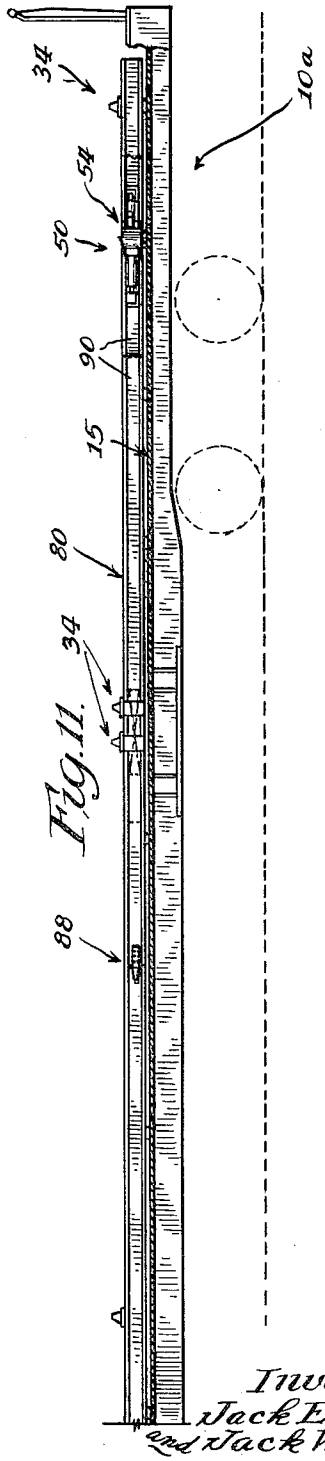

Fig. 11.

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CUSHION CONTAINER SUPPORT PLATFORM FOR RAILROAD FLATCARS

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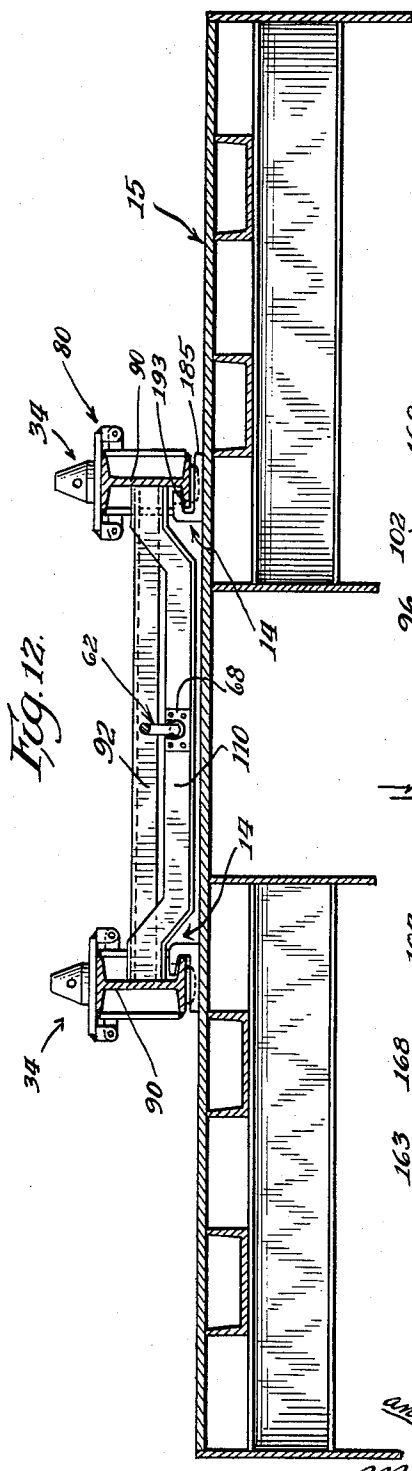

Fig. 12.

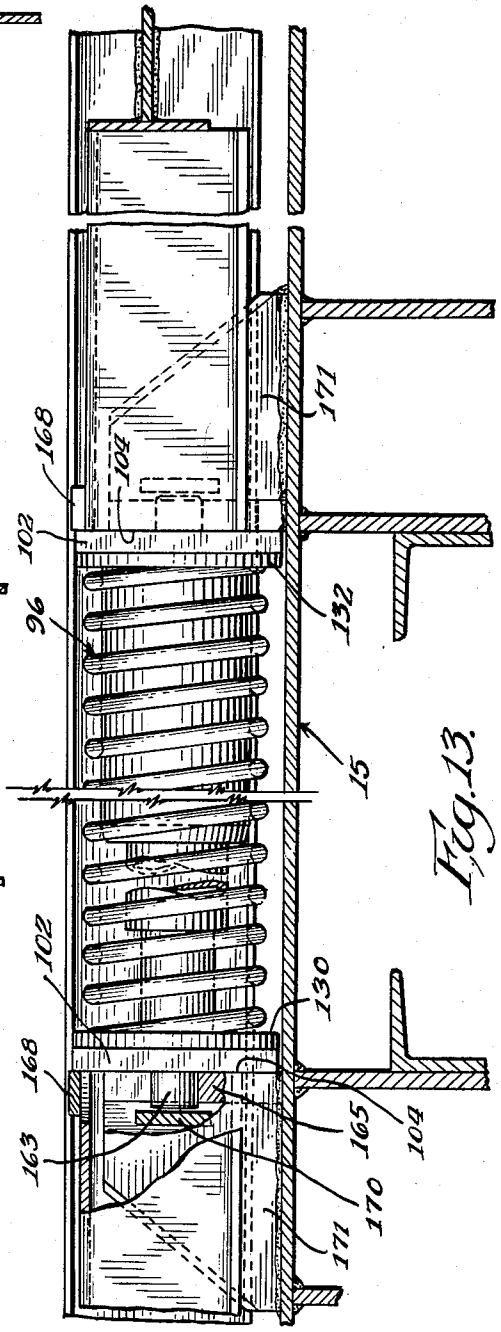

Fig. 13.

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Dec. 29, 1964 J. E. GUTRIDGE ETAL 3,163,127

CUSHION CONTAINER SUPPORT PLATFORM FOR RAILROAD FLATCARS

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Fig. 14.

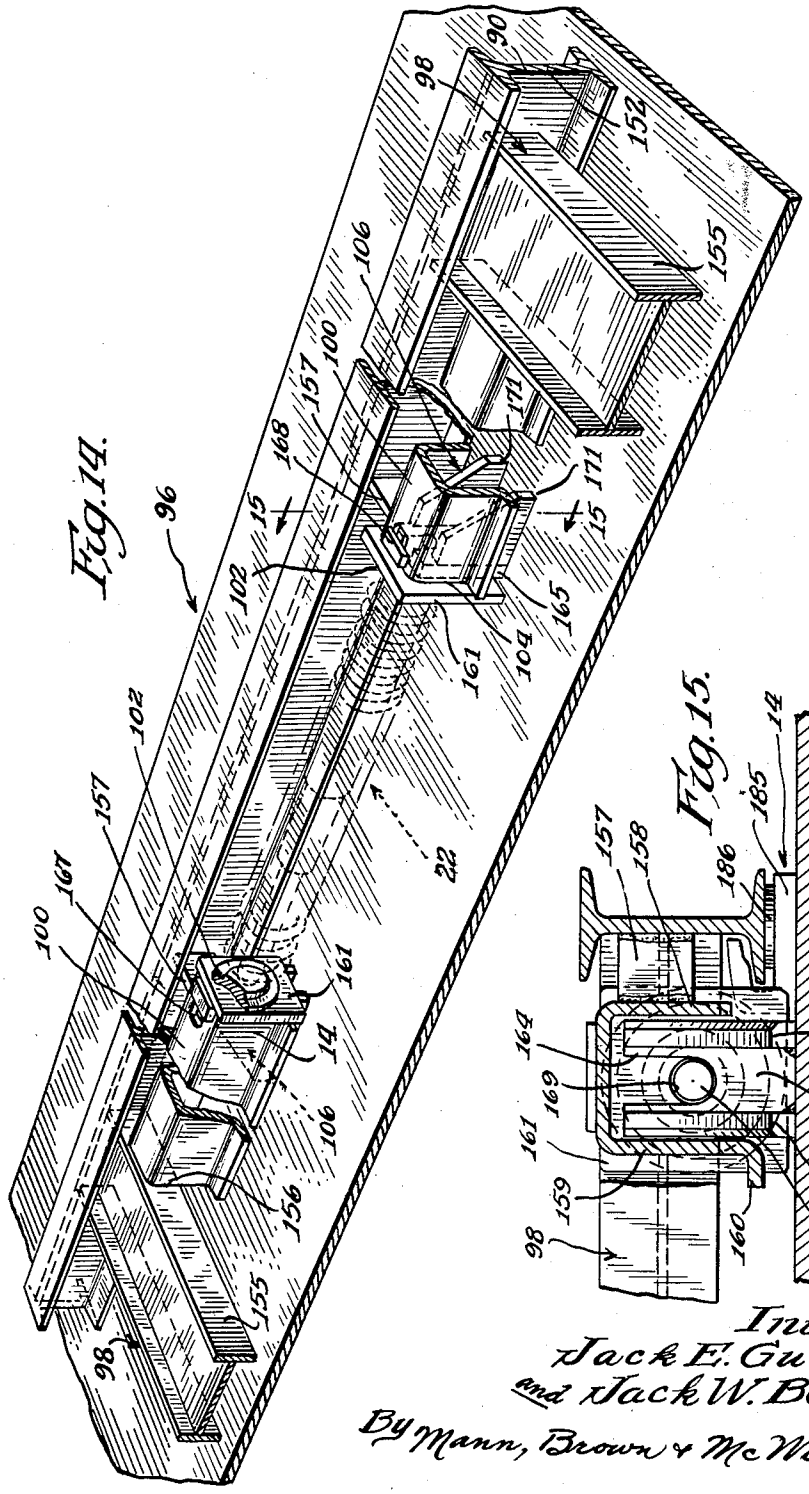

Fig. 15.

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Dec. 29, 1964 J. E. GUTRIDGE ETAL 3,163,127

CUSHION CONTAINER SUPPORT PLATFORM FOR RAILROAD FLATCARS

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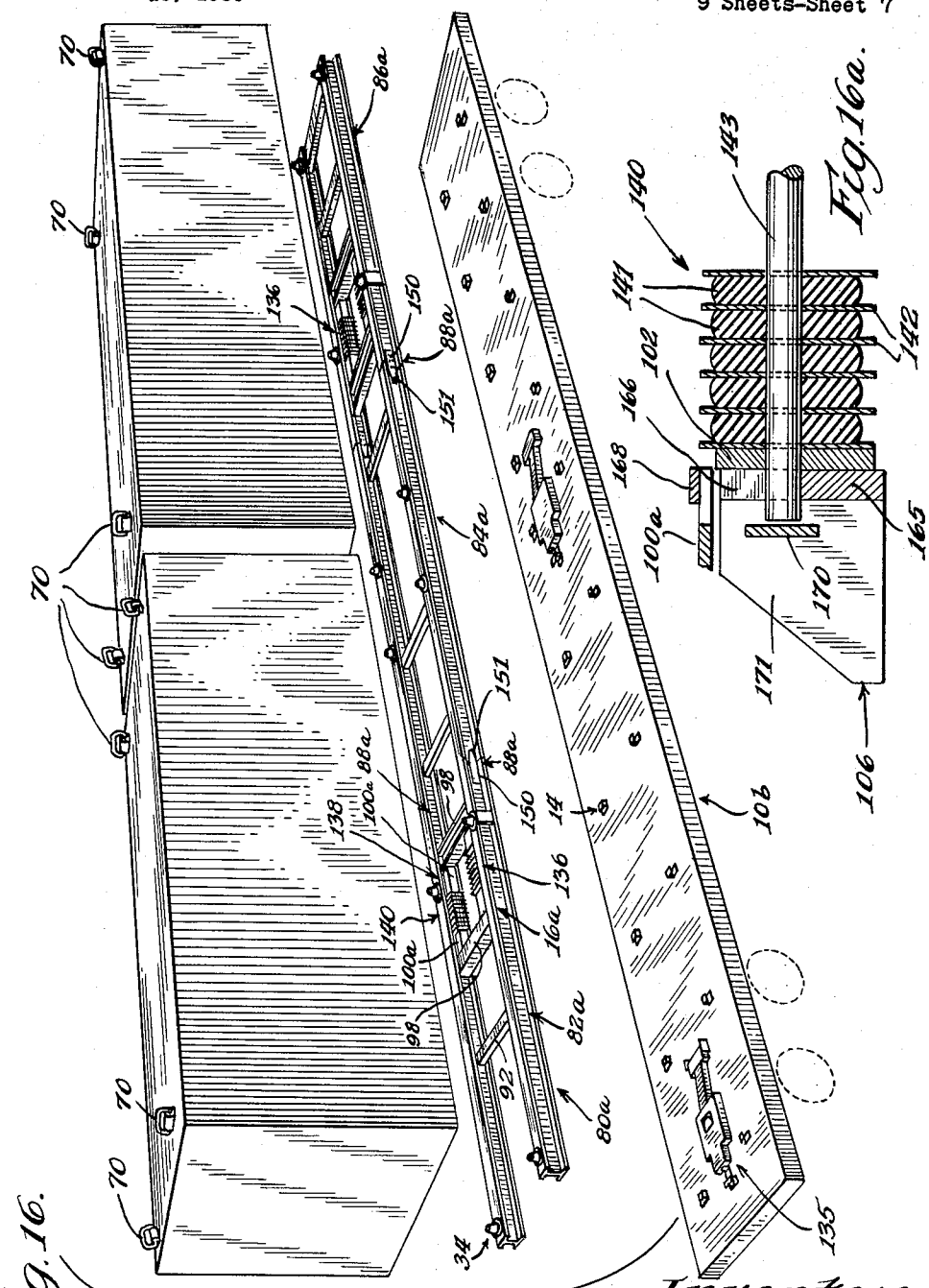

Fig. 16.

Fig. 16a.

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CUSHION CONTAINER SUPPORT PLATFORM FOR RAILROAD FLATCARS

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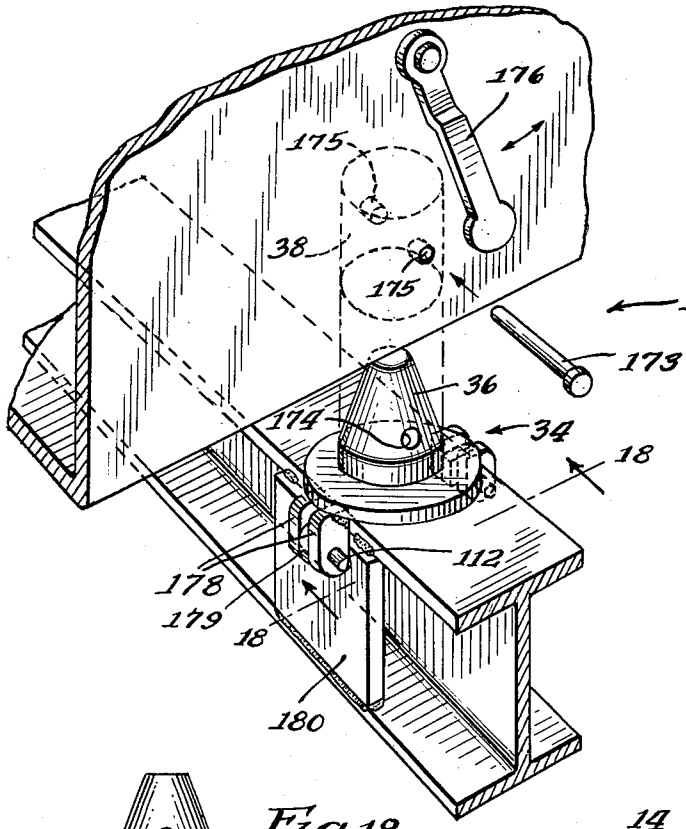

Fig. 17.

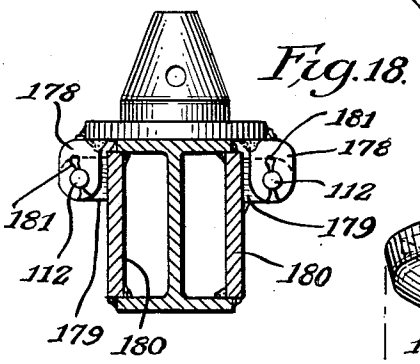

Fig. 18.

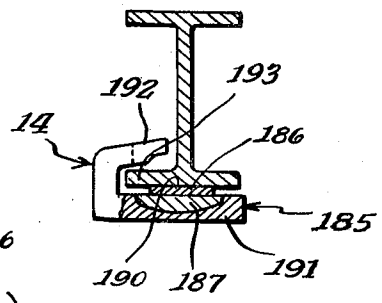

Fig. 19.

Fig. 20.

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CUSHION CONTAINER SUPPORT PLATFORM FOR RAILROAD FLATCARS

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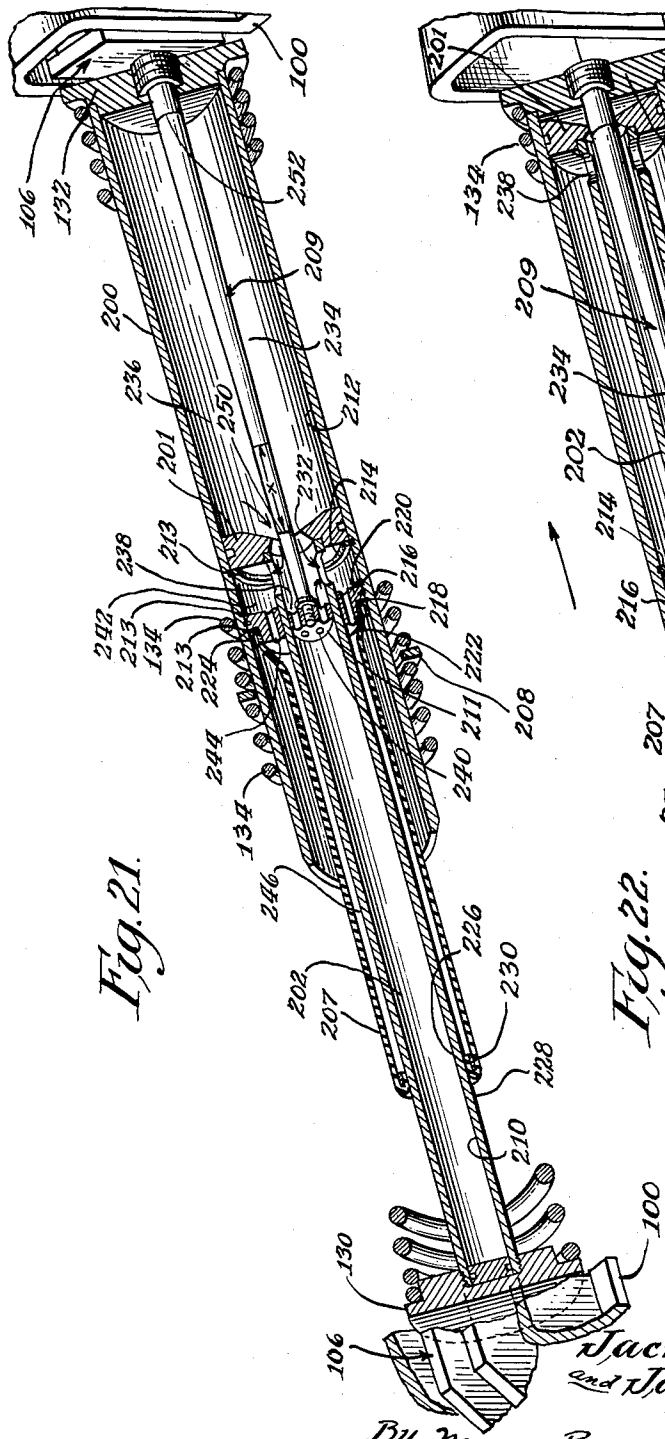

Fig. 21.

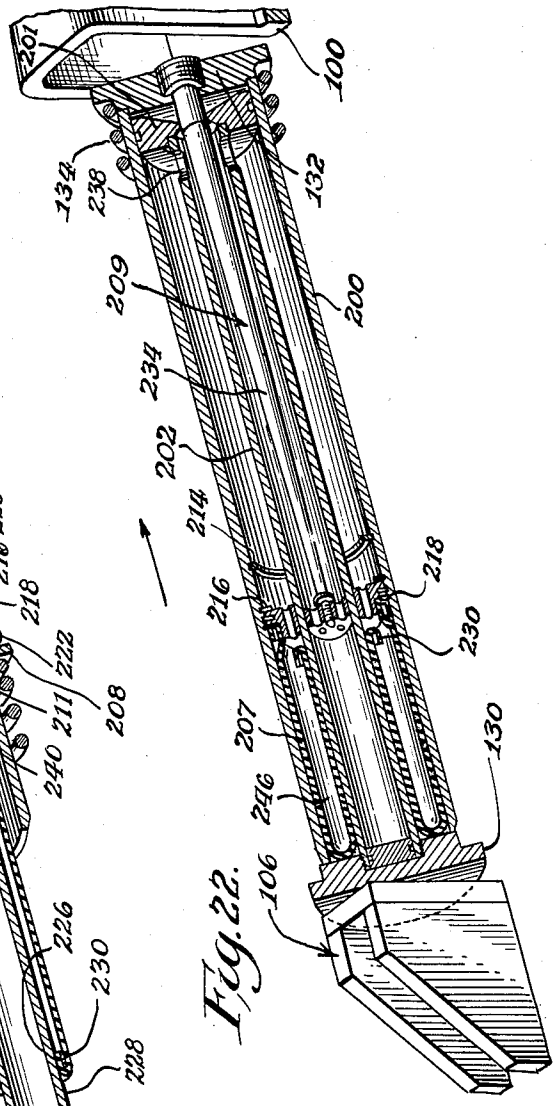

Fig. 22.

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United States Patent Office 3,163,127
Patented Dec. 29, 1964

3,163,127

CUSHION CONTAINER SUPPORT PLATFORM FOR RAILROAD FLATCARS

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Filed June 15, 1960, Ser. No. 36,222
9 Claims. (Cl. 105—368)

Our invention relates to a cushioned container support platform for railroad cars, and more particularly, to a cushioned container platform, carriage, or rack for application to standard flatcars for protecting during rail transit lading in freight containers and trailers, which platform, carriage or rack is cushioned against longitudinal impacts in accordance with the principles described in the copending application of William H. Peterson, Serial No. 856,963, filed December 3, 1959, now Patent 3,003,436, granted October 10, 1961 (the entire disclosure of which is incorporated herein by this reference).

Lading damage resulting from coupler impacts and the claims resulting therefrom have always been a major problem for the railroad industry, but during recent years the problem has been greatly magnified by increased service speeds with the resulting increase in severity and frequency of coupler impacts between freight cars.

The invention of said Peterson application Serial No. 856,963 provides a new approach to the protection of lading in transit on railroad cars, which is applicable to both standard railroad cars, such as boxcars and flatcars, as well as cars especially designed for piggyback and freight container systems of handling freight.

As disclosed in said Peterson application Serial No. 856,963, during impacts, changes in the absolute velocity of the lading, which are normally caused by stopping and starting of the car, and by impacts against the car couplers during transit, are effected by adding or subtracting kinetic energy to the lading through the frictional forces acting between the lading and the car as well as the pressure of the car end wall on the lading (the car end wall involved depending on which car coupler is initially subjected to the longitudinal shock and whether the shock is in buff or in draft).

Said Peterson application discloses that damage free lading protection against longitudinal impacts (that is, impacts applied against the car couplers) can be obtained if there is interposed between the couplers and the car body containing the lading a cushioning device or arrangement having a cushion travel sufficient in capacity and length that the absolute velocity of the lading is changed to that required by the Law of Conservation of Momentum for Inelastic Bodies by employing to a substantial degree the frictional forces acting between the lading and the car, as distinguished from the compressive forces applied to the lading by the car end wall. This novel approach is particularly applicable to resilient lading (goods packed in fibre boxes) and involves, among other things, extending the time of closure of the cushioning device employed sufficiently so that the changes that must occur to the absolute velocity of the lading (by reason of the aforementioned Law of Conservation of Momentum) occur to the lading as a unit. The length of travel found essential for U.S. railroad practices is in the range of 20–40 inches, and preferably is on the order of 30 inches.

It has been found, as disclosed in said Peterson application, that a cushion travel in this range permits the inherent stability of the load and the friction between the lading and the car body to act as substantial factors in creating the lading acceleration (either positive or negative) necessary to achieve the absolute velocity dictated by the aforementioned Law of Conservation of Momentum, without developing within the lading the destructive compressive forces which cause lading damage.

Said Peterson application further discloses that the benefits of his invention may be employed in practicing container systems of handling freight by mounting on a standard flatcar, platform or carriage on which the freight container is supported, and interposing between the platform or carriage and the bed of the flatcar a cushioning device of the character contemplated by the Peterson invention.

Our invention relates to a specific embodiment of such an arrangement.

In recent years, container systems of transporting freight, employing demountable containers, have received considerable attention because of increased economies in the use of equipment and improved service to shippers. This is particularly true with regard to less than carload shipments. However, container systems heretofore proposed have in general failed to make adequate provision to protect container lading from the adverse affects of longitudinal shocks during railroad transit.

Cushion underframes for railroad cars adapted for use in container systems as well as for boxcars and the like have provided a partial answer to the problem of overcoming the adverse affects of longitudinal shocks, but new cars of this type are an expensive investment which most railroads desire to avoid so long as existing equipment can be maintained in operation.

A principal object of our invention is to provide a simplified cushioned container support rack or platform arrangement for mounting freight containers on standard flatcars.

Another important object of our invention is to provide a simplified rack or carriage for mounting containers, particularly those of the crane lift type, on standard railroad flatcars, including a long travel cushioning arrangement that insures lading protection against longitudinal impacts.

A further important object of our invention is to provide a cushioned rack or platform for flatcars and the like that contemplates a standardized arrangement for use with both long and shorter travel cushioning devices, and that is adapted to either carry a fifth wheel stand assembly for securing trailers to the car or be applied to a car in nesting relation to a fifth wheel stand assembly already applied to the car.

Other objects of the invention are to provide an improved cushioning arrangement for container support platforms or racks, to provide an improved cushioned rack arrangement especially suited for adaptation to the piggyback system of handling freight, to provide a trailer hitch arrangement for securing trailers to the cushioned rack of this invention which is arranged to permit trailer end loading of the car as well as alternate use of the rack for handling freight containers, and to provide freight handling equipment that is inexpensive of manufacture, convenient in use, and applicable to standard rail equipment without material modification thereof.

Further objects, uses and advantages will be obvious or become apparent from a consideration of the following detailed description and the application drawings.

In the drawings:

FIGURE 1 is a diagrammatic exploded perspective view illustrating largely in block diagram form the type of equipment to which our invention relates, showing also a type of container adapted to be associated with the cushioned rack component, a trailer chassis adapted to carry the container for highway transit, and suitable latching devices for latching the container to both the chassis and the rack;

FIGURES 2 and 3 diagrammatically illustrate two alternate ways of loading the standard flatcar of FIGURE

1 that are made possible by the cushion rack arrangement of this invention;

FIGURE 4 is a diagrammatic perspective view of a specific form of our cushioned rack or platform, showing it vertically displaced from a representation of a standard flatcar to better illustrate the manner in which it is mounted on the car;

FIGURE 5 is a fragmental enlarged plan view of a portion of one of the cushion assemblies employed in the embodiment of FIGURE 4;

FIGURE 6 is a fragmental sectional view along line 6—6 indicating in broken lines the manner in which the cushion device of the cushion assembly is positioned against the cushion assembly abutment members of the rack;

FIGURES 7 and 8 are plan and side elevational views respectively, of the cushion rack arrangement of FIGURE 4, showing only the left hand half of the car, and with the showing of FIGURE 8 being partially in section;

FIGURE 9 is a diagrammatic fragmental elevational view of a splice arrangement for joining the adjacent sill members of the rack of this invention;

FIGURES 10 and 11 are plan and side elevational views of the embodiment of FIGURE 4, showing only the right hand half of the car structure, and with the showing of FIGURE 11 being partially in section;

FIGURE 12 is a diagrammatic cross-sectional view substantially along line 12—12 of FIGURE 7;

FIGURE 13 is a fragmental sectional view substantially along line 13—13 of FIGURE 10;

FIGURE 14 is a diagrammatic perspective view indicating the basic features of the dual cushion arrangements we have employed in connection with the embodiment of FIGURE 4;

FIGURE 15 is a diagrammatic fragmental sectional view substantially along line 15—15 of FIGURE 14;

FIGURE 16 is a diagrammatic perspective view of a cushioned rack or platform that is similar to that of FIGURE 4, but is adapted for use on flatcars already having a fifth wheel stand assembly attached thereto, also showing several containers adapted to be carried by the modified form of rack or platform;

FIGURE 16*a* is a fragmental sectional view of the cushion device employed in the arrangement of FIGURE 16;

FIGURE 17 is a fragmental diagrammatic perspective view illustrating a container support bracket arrangement of a type that may be employed in connection with this invention;

FIGURE 18 is a sectional view along line 18—18 of FIGURE 17;

FIGURE 19 is a fragmental sectional view along line 19—19 of FIGURE 7, illustrating the antifriction rack or platform guide assemblies employed in connection with this invention;

FIGURE 20 is a diagrammatic exploded perspective view of the movement guide assembly shown in FIGURE 19;

FIGURE 21 is a diagrammatic perspective view, in section, of the hydraulic cushion unit employed in connection with this invention, showing same in extended position; and

FIGURE 22 is a perspective view of the same hydraulic cushion unit, but showing same in contracted relation.

General Description

Referring now to FIGURE 1, which diagrammatically depicts the various pieces of freight handling equipment which our present invention is associated, reference numeral 10 generally indicates a standard railroad flatcar having applied thereto a cushion container support platform carriage or rack 12, which is adapted to carry freight containers, and which is slidably mounted on spaced antifriction bracket assemblies 14 fixed to car deck 15 that serve the purpose of guiding the movement

of the carriage or rack 12 when the impetus of coupler impacts is being dissipated and when the carriage or rack 12 is being returned to its normal load carrying position.

The carriage or rack 12 of FIGURE 1 is of the type described in the copending application of Jack E. Gutridge, Serial No. 21,331, filed April 11, 1960 (the disclosure of which is hereby incorporated herein by this reference) and comprises spaced side sills 16 joined together by suitable transversely extending members 18, and the rack or platform 12 includes a cushion pocket 20 that is adapted to receive a hydraulic cushion device 22 (see FIGURES 21 and 22) of the type described in the copending application of William H. Peterson, Serial No. 782,786, filed December 24, 1958, now Patent 3,035,827, granted May 22, 1962 (the entire disclosure of which is hereby incorporated herein by this reference). The cushion device 22 is a dissipative energy system type constant force travel long travel cushioning mechanism arranged to transfer and dissipate substantially all kinetic energy imposed upon the flatcar by draft and buff forces applied to one of the car couplers (in excess of the minor amount absorbed by the draft gear and return springs of the device 22) leaving no excess energy to cause lading damage.

Device 22 is interposed between spaced stop members 24 affixed to the car 10 and spaced lugs 26 carried by the rack or carriage 12 adjacent each end of the cushion pocket 20. The cushion device 22 includes follower elements 28 that respectively bear against the respective sets of lugs and stops 24 and 26. The rack or carriage 12 of FIGURE 1 also includes a spring pocket 30 in which a booster spring 32 is interposed between a second set of stop members 24 and lugs 26 for purposes of supplementing the return action of the hydraulic cushioning device 22. Spring 32 may be associated with suitable spring seats 33.

The rack 12 in the showing of FIGURE 1 is provided with suitable latching devices for latching a container to a rack when, for instance, the loading arrangement of FIGURE 2 is to be employed, which latching devices may include the familiar form of bracket structure 34 including a cone-shaped protuberance 36 that is adapted to be received in the recess 38 formed in the undersurface of freight container 40 that is adapted to be mounted on rack 12.

Preferably, the bracket structures 34 and recesses 38 of the containers 40 are given a standard lateral and longitudinal spacing so that the containers may be interchangeably mounted either on the rack 12 or on the highway vehicle chassis generally indicated at 42 in FIGURE 1. Also the bracket structures 34 are spaced apart laterally of the car a distance corresponding to the normal spacing between the sill members 44 of the chassis and the sill members 16 of rack 12 are given a similar spacing, all this being disclosed in said Gutridge application Serial No. 21,331.

As described in said Gutridge application, the spacing of the chassis sill members 44 is limited by regulations dealing with the spacing between the chassis wheels 46, and by giving the sill members 16 a spacing corresponding to the spacing of the chassis sill members 44, piggyback loading procedures may be employed in connection with car 10 since the chassis wheels 46 will ride on either side of rack 16.

Thus, car 10 will not interfere with standard piggyback procedures when incorporated in a train with other flatcars that are to be used in piggyback service, and further, a car 10 may be employed in piggyback service, for instance, in the manner indicated in FIGURE 3, as the rack 12 is provided with retractable fifth wheel stand assemblies 50 for the purpose of securing, for instance, trailer 52 of FIGURE 3 to the rack or carriage 12.

The stand 50 is fully disclosed in our concurrently filed application Serial No. 36,310, filed June 15, 1960

(the entire disclosure of which is hereby incorporated herein by this reference), to which reference may be had for a full understanding of the specific features of stand 50. However, for purposes of the present disclosure, it suffices to point out that the stand 50 comprises a latching device 54 adapted to be supported by tripod type prop structure 56 when trailer 52 is applied to car 10. The latch device 54 is arranged to be secured to the kingpin of trailer 52, for instance, as shown at 58 on container 40, and as brought out in our said concurrently filed application Serial No. 36,310 this may be done either by first positioning and latching the prop structure 56 in its operative elevated position and then crane lifting a trailer onto the car, or by backing the trailer onto the car while the stand remains in its retracted position and then raising the stand for engagement with the kingpin. Prop structure 56 comprises three spaced telescoping strut assemblies 60, 61 and 62 (see FIGURE 7) which are connected to the kingpin latch device by the ball and socket joint assemblies 62, 63 and 64 that are diagrammatically illustrated in the drawings, said strut assemblies being connected to the rack or carriage 12 by similar ball and socket joint assemblies 66, 67 and 68, respectively.

Thus, the freight handling equipment of FIGURE 1 may be employed for carrying either trailers 52 or containers, such as container 40, with the containers 40 being conveniently crane lifted onto the rack 12 by employing the retractable eye assemblies 70.

In accordance with this invention, the rack 12 assumes the specific forms of FIGURES 4–16.

In the embodiment of FIGURES 4–15, the improved rack 80 is applied to car 10*a* and generally comprises a forward section 82, a center section 84, and a rearward section 86, joined together by the splice assemblies 88 illustrated in FIGURES 7–11 to define an elongate container support rack or platform of a general type shown in FIGURE 1. The rack 80 is defined by composite sill members 16*a* which have the lateral spacing previously described and are made up by I beams 90 that form the individual frame sections. The I beams 90 of each section are fixed together in spaced apart relation by suitable transverse cross ties 92 which have a channel-shaped cross-sectional configuration in the illustrated embodiments.

The I beams 90 of the forward and rearward sections are also joined together by the dual cushion assembly arrangements generally indicated by reference numeral 94, which are employed to provide the long travel cushioning characteristics contemplated by said Peterson application Serial No. 856,963.

As indicated in FIGURES 4, 7, 10 and 14, the arrangements 94 each comprise a pair of cushioning assemblies 96 interposed between spaced transversely extending brace members 98 that are rigidly connected between the I beams 90 of the forward and rearward sections 82 and 86. Preferably, the cushioning assemblies of one of the cushioning arrangements 94 are equipped with the cushion devices 22, while the other cushioning arrangement may be equipped with the booster return springs 32.

As indicated in FIGURE 14, each of the cushioning assemblies 96 includes a pair of abutment members 100 that are spaced from each other longitudinally of the car and abut against the respective brace members 98. The cushion device 22 illustrated, in the cushioning arrangement where employed, includes follower members 102 that are pressed against the ends 104 of abutment members 100 that face each other, and the followers 102 also engage stop members 106 that are fixed to the car bed 15. In the case of the other cushion assembly arrangement, the booster spring 32 is employed in place of the cushion devices 22, but included are the same abutment members 100, and followers 102.

It will therefore be seen that the abutment member 100 corresponds to the lugs 26 of FIGURE 1 while the stop members 106 correspond to the stop members 24 of FIGURE 1.

It will also be observed from FIGURES 4, 7, and 10, that the rack or platform 80 is provided with two fifth wheel stand assemblies 50, which are secured to the forward and central rack sections in association with appropriate transversely extending cross tie members 110. An additional cross tie member 112 is provided on which the kingpin latching device 54 rests in the retracted position of the stand. As disclosed in our concurrently filed application Serial No. 36,310 the stand assemblies 50 are arranged so that they lie within the horizontal plane of rack 80 in their retracted positions so that they do not interfere with the application of containers 40 to the rack (see FIGURE 11).

The container support bracket structures 34 are affixed to rack 80 in accordance with the spacing already described. The container latch devices with which bracket structures 34 are associated are depicted in FIGURES 17 and 18.

The rack 80 is supported on car 10*a* and guided by the antifriction bracket devices 14, the structural features of which are diagrammatically illustrated in FIGURES 19 and 20.

In use, the car 10*a* may be loaded by applying containers 40 to the rack of platform 80 to provide, for instance, the arrangement of FIGURE 2, it being understood that the bracket structures 34 may be positioned along sills 16*a* as desired to provide any preferred container support arrangement for either relatively long or relatively short containers. The bracket structures 34 not used may be swung to one side as the bracket structures 34 are hinged in place and latched against swinging movement by removable pins 112 (see FIGURE 18).

Alternately, one or both of the fifth wheel stands 50 may be employed to secure trailers such as trailer 52 to the car 10*a*, and this may be done either by crane lifting a trailer onto the car or by employing the standard piggyback end loading procedure.

Assuming that it is desired to back the trailer 52 onto the car 10*a* in accordance with standard piggyback practice, the car 10*a* is positioned as customary for such procedures so that the trailer can be backed onto the car 10*a* from a suitable loading ramp at the end of a string of cars of which car 10*a* will form a part. The trailer 52 is backed until its kingpin is approximately positioned over a stand assembly 50 after which the trailer is lowered onto its landing gear 122 (see FIGURE 3) and then disconnected from its tractor after which the tractor is removed.

As disclosed in our said concurrently filed application Serial No. 36,310, the stand assembly 50 permits an operator to manually lift the kingpin latching device 54 from its lowered retracted position into operative engagement with the kingpin 58, the ball and socket joint assemblies permitting limited adjustment laterally and longitudinally of the cars as may be required to properly seat the kingpin within the latch device 54. When the latch device 54 has been properly positioned in association with the kingpin 58, the tubular strut assemblies 60, 61 and 62 are secured in their extended positions, as by employing appropriate latch pins that are applied between aligned holes and the telescoping members 123 and 125 that make up the respective strut assemblies.

The kingpin latching devices 54 are latched and keyed to the trailer kingpin by employing the latch arrangement disclosed in our said concurrently filed application Serial No. 36,310. The landing gear 122 (that illustrated is intended to represent any suitable retractable landing gear) of the trailer is then retracted to rest the forward end of the trailer on the stand 50 and this permits the long travel cushioning arrangement of FIGURES 4–15 to protect the lading of the containers 52 when coupler impacts are occasioned, in accordance with the teaching of said Peterson application Serial No. 856,963.

The trailer is disconnected from the stand 50 by substantially reversing the locking procedure above outlined.

In the event that the trailer 52 is to be crane loaded onto car 10, the stand 50 is initially raised to an elevated position to approximate the height required to support the front end of the trailer above the bed of car 10*a* without resting it on its landing gear. A suitable crane is employed to lift the trailer 52, from a loading point alongside the car 10 to a position above the car 10*a* with the trailer kingpin more or less aligned with latching device 54. The trailer is then lowered to bring the kingpin 58 into engagement with the latch device 54, after which the latch device is secured to the kingpin in accordance with the invention of our said application Serial No. 36,310, filed June 15, 1960.

During rail transit, when the car 10*a* receives longitudinal impacts, there is relative movement between the carriage or rack 80 which is opposed by the cushion devices 22. Under the impulse of an impact, the cushion devices 22 move from the extended position of FIGURE 21 to the contracted position of FIGURE 22, and in so doing, dissipate part of the kinetic energy of the impulse in the form of heat and gradually transfer the rest to the carriage or rack 80 and its load.

For instance, when an impact in buff is experienced by the left hand end of the car of FIGURE 4, which thus acts in the direction of the arrow of FIGURE 22, the car bed 15 moves under the impetus of the impact, which thus moves the left hand stop member 106 of FIGURE 14 against follower 102 that the hydraulic device closure member 130 abuts, which presses the cushion against the right hand abutment member 100. Due to the inertia of the containers and/or trailers and their lading, and the connection between the containers and/or the trailers and the platform or carriage 80, the absolute velocity of the platform or carriage 80 is initially unaffected by the impact, but the pressure of the hydraulic device closure member 132 acting on the right hand abutment member 100 gradually transfers the kinetic energy of the impact to the platform or carriage 80 and its load. The cushion device continues to close until its parts have the operative relation indicated by FIGURE 22, at which time the containers and/or trailers and the platform or carriage 80 have the ultimate velocity dictated by the aforementioned Law of Conservation of Momentum.

After the impetus of the impact has been dissipated and the kinetic energy involved in the impact has been transferred to the containers and/or trailers and their lading through the cushion device, springs 134 acting in tandem on closure members 130 and 132 restore the platform or carriage 80 and the containers and/or trailers to their normal centralized positions with respect to the car 10*a*. When the direction of impact is in the opposite direction, the functioning of the hydraulic devices and the remainder of the cushioning assemblies is the same, though the forces act in the opposite direction.

Similar remarks apply to impacts in draft that are applied to car 10*a*.

FIGURE 16 illustrates a modified form of cushion rack or platform 80*a* which is adapted for application to the car 10*b* which already has applied thereto conventional fifth wheel stands 135. The rack or platform 80*a* is mounted on bracket assemblies 14 in nesting relation to stands 135 and includes the sill members 16*a*, the cross ties 92 joining them together, the container support bracket structures 34, and it is made up of sections 82*a*, 84*a* and 86*a* that are similar to the corresponding sections 82, 84 and 86 of rack or platform 80. These sections are joined together by splice assemblies 88*a* that are identical with splice assemblies 88.

The dual cushion assembly arrangements indicated at 136 are structurally similar to arrangements 94 except that they are arranged for use in connection with shorter travel cushioning devices.

It has been found that cars such as car 10*b* having existing fifth wheel stand assemblies 135 do not permit a cushioned travel in the range of 20–40 inches as there will be interference between the stands 135 and the rack or carriage 80*a* when longitudinal impacts are occasioned. However, the benefits of our specific rack or platform arrangement of this application may be had in connection with the car 10*b* by employing conventional rubber pad cushioning devices 140 as part of the individual cushioning assemblies 138, which provide a cushion travel on the order of ten inches in either direction.

The individual cushioning assemblies will thus include the abutment members 100*a* and the stop members 106*a*, as well as followers 102, the rubber cushioning devices 140 being interposed between the follower members 102.

The cushioning devices 140 (see FIGURE 16*a*) may be of the well known type that includes a plurality of rubber pads 141 separated by metal separator plates 142, which are customarily assembled on rod 143, as is well known in the art.

The arrangement of FIGURE 16 will not provide the benefits described in Peterson application Serial No. 856,963 with respect to resilient lading, but lading that is of a more rigid type, or which is securely anchored to the containers or trailers will be adequately protected by this particular embodiment of the invention.

Specific Description

The railroad flatcars to which our invention may be applied may be of any standard make and the cars 10*a* and 10*b* are intended to represent any convenient form of flatcar which is not of the type that has a cushion underframe or cushioned body arranged to provide the long travel cushioning action of said Peterson application Serial No. 856,963.

The splice assemblies 88 for securing the sections of rack 80 together each comprise pairs of plates 150 (see FIGURES 7 and 9) having their tapering ends 151 welded to the ends of the respective I beams 90 that form the center section 84. The end sections 82 and 86 may be conveniently assembled to the center section by positioning their respective I beam webs 152 between the respective projecting ends 153 of the plates 150 and then applying appropriate bolts 154 through holes formed in these members to fix the splice plates to the I beams of the respective end sections.

The brace members 98 defining the limits of the respective cushioning arrangements 94 comprise I beams 155 that are fixed between the webs 152 of the respective rack section I beams, as by welding. The members 155 should be spaced sufficiently above the bottom flanges of the I beams 90 to avoid interference with the antifriction bracket devices 14, as indicated in FIGURES 6 and 15. This also applies to cross ties 92 (see FIGURE 12).

The abutment members 100 are generally channel shaped in cross-sectional configuration (see FIGURES 14 and 15) and are welded to the brace members 98 that they abut, as at 156. They are also affixed to the webs 152 of the adjacent I beams 90 by welding tie plates 157 between the two. Abutment members 100 have relatively short sides 158 to avoid interference with the adjacent antifriction bracket assemblies 14 (see FIGURE 15), and their sides 159 are provided with a laterally extending inwardly directed reinforcing flange 160.

The follower members 102 in the form of FIGURES 4–15 are illustrated as quadrilateral metal plates 161 which abut against the respective ends 104 of the respective abutment members 100.

The cushion devices 22 in the form of FIGURES 4–15 are shown as having affixed to their closure members 130 and 132 seating projections 163, which pass through openings 169 formed in follower plates 161 and are received in slots 164 that are formed in stop members 106.

Individual stop members 106 each comprise a pair of spaced lugs 171 fixed to the car deck as by welding, and

which are joined together by a tie plate 170 and an abutment plate 165 that is likewise fixed to the car deck, with the slot 166 being formed in said abutment plates 165. The abutment members 100 are formed with recesses 167 to accommodate the projections 163 when placing the specific cushions 22 illustrated in operating position, which openings 167 may be closed by suitable retainer plates 168 affixed in place as by welding.

The specific cushion devices 22 are shown in association with seating projections 163 and abutment plates 102 as this makes such cushions interchangeable with rubber pad cushions 140, wherein the pads 141 and separator plates 142 are assembled together with follower plates 102 on rods 143. Of course, the abutment members 100 and 100*a* are made sufficiently long, and brace members 98 are spaced sufficiently far apart to permit the indicated relative movement of racks 80 or 80*a* with respect to the car 10*a* or 10*b* (and in particular, the stop members 106 affixed thereto), that is necessary depending on which cushion device is to be employed.

The rack or platform 80*a* may be considered the same as rack or platform 80, except for the differences illustrated and noted, as indicated by corresponding reference numerals.

It is contemplated that the cushioning devices 22 will be mounted in suitable housings extending between the abutment members 100 to provide a guiding action on the cushion devices as they move between extended and contracted positions. Such housing arrangement may take any suitable form. Furthermore, follower plates 102 may be eliminated, when devices 22 are employed, where their closure members 130 and 132 are proportioned to properly engage abutment members 100 and stop members 106, and, of course, projections 163 may be eliminated if so desired, all as indicated in FIGURES 21 and 22.

The supporting members 110 and 112 of stand assemblies 50 may be formed as necessary and desirable to avoid interference with antifriction bracket assemblies 14 (see, for instance, FIGURE 12).

The bracket structures 34 form a part of the well known type of latching device generally indicated at 172 in FIGURE 17, which includes the cone-shaped protuberance 36 that is adapted to be received in the recess 38 of the container. Latching devices 172 also include a suitable pin 173 that is adapted to be received through holes 174 and 175 of the bracket structure and container, respectively, to secure the two together, the pin being screw threaded into position in the container or being held in place by a suitable pivoted spring latch diagrammatically illustrated at 176.

As already indicated, the bracket structures 34 are applied to the rack or platform 80 in transversely disposed pairs, and a standard spacing longitudinally of the chassis frame members and platform or rack sill members is employed between the pairs of bracket structures, such as that required for supporting a container having a nominal 20 foot length. In one specific arrangement to which our invention has been applied, the actual containers are 19 foot 9 inches in length, and the pairs of container support brackets and their corresponding recesses in the undersurface of the container are spaced apart on centers 19 feet 2 inches apart, but this spacing and the container size employed are optional, as already indicated.

The container support brackets 34 that are located intermediate the points where full length container ends will be supported each have affixed thereto at diametrically opposed edges thereof, lugs 178 that are adapted for hinging alignment with complementary lugs 179 fixed to mounting plates 180 that are in turn fixed to either side of the respective beams 90. The lugs 178 and 179 are pivoted together by suitable pins 183, which are preferably made removable so that the bracket structure 134 may be pivoted to one side or the other of the perspective beams 90 when necessary. Pins 183 may be held in place by suitable cotter pins 181, or any other suitable manner.

The remaining brackets 34 are fixed directly to the respective beams 90.

As described in said Gutridge application Serial No. 21,331, four of such support bracket structures 34 are fixed to chassis 75 at the respective ends of the longitudinally extending sills 44 (see FIGURE 1), where the chassis is to support a 20 foot freight container, or an additional set of four support brackets may be applied to the chassis where the chassis is of sufficient length to support a 40 foot container or two 20 foot containers. Thus, at an unloading yard a container 40 may be applied to a chassis 42 by a crane, with the chassis bracket structure 34 being received in the recesses 38 of the container body and the pins 173 applied to the respective bracket structures and container body recesses to complete the respective latching devices 172 for securing the container to the chassis. Assuming that the container body 40 has been previously loaded, the highway vehicle is then driven to a suitable railroad yard for application to car 10*a*. At the yard, the latching devices 172 are unlatched and the appropriate support brackets 34 of the car are positioned to receive the container when it is crane lifted from the highway chassis onto the platform or carriage 80, after which the latching assemblies 80 are again completed by employing suitable pins 173 to the respective container body recesses and the platform or carriage bracket structures as before described.

By selecting and appropriately positioning the container support brackets along the railroad car platform or rack 80 in accordance with the various lengths of the container or containers to be carried, containers may be arranged on the car in any desired manner consistent with the length of the containers and the need for carrying a trailer piggyback fashion on the car 10*b*. The support bracket structures not in use may be swung to one side at points along the rack where they will be positioned underneath a container that will extend beyond them.

Referring to FIGURES 19 and 20, the antifriction bracket devices 14 generally comprise a movement guide device 185 which forms a retainer for an antifriction pad 186 on which the rack 80 actually rides (see FIGURES 6 and 15).

The pads 186 are preferably formed from a TFE fluorocarbon resin, known as Teflon, made and sold by E. I. du Pont de Nemours & Co., Inc. Each pad 186 (see FIGURE 20) is of parallelepiped configuration and is affixed by a suitable adhesive to a bearing block 187 that includes a spherically contoured convex surface 188 which is received in a complementary spherically contoured concave seat 189 formed in the individual guide devices 185. The pads 186 are formed with an upper planar surface 190 against which the respective sill members 16*a* rest.

The individual guide devices 185 are preferably a one piece member including a base 191 in which the seat 189 is formed, and which may be affixed to the deck of car 10*a* as by welding, and a hooked arm 192 that is to extend over the bottom flange 193 of the respective sill members 16*a* supported by the bracket devices 14. The individual guide devices 185 are preferably formed with the rounded opening 194 in the respective arms 192 for ease of applying the pad 186 and its bearing block 187 to the individual guide devices 185.

The material Teflon is preferred for the antifriction pads as it has been found that it has relatively high frictional characteristics when the platforms 80 or 80*a* are moved over the pads at relatively high speeds during the dissipation of an impact, while at the same time evidencing low frictional characteristics when these container support platforms are being returned to their normal positioning at low speed by the cushion springs and

the booster springs after the impetus of an impact has been dissipated. For instance, when the car 10*a* is subjected to a 10 mile an hour impact when loaded with containers (each containing a normal load), the cushion devices 22 fully close and the platform or rack 80 travels its full distance at about 1/20 of the time it takes for the return of the platform to its normal centered position with respect to the car. Tests have shown that the apparent frictional characteristics of a Teflon pad 186 during closure of the cushion are about twice as great as they are during return of the cushion devices 22 to their extended positions, thus permitting the use of smaller return springs 32 than would normally be thought possible.

Of course, the guide devices 185 are applied to the car underframe to define the path of movement desired for the platform or rack with respect to the car 10*a*. The spherically contoured surfaces 188 and 189 provide the pad with a self-centering action so that surface 190 will be in full contact with the undersurface of the respective sill members 16*a* in spite of minor tolerance variations.

The relative spacing of the antifriction bracket devices 14 is optional, though an appropriate spacing is indicated in FIGURES 7, 8, 10 and 11.

FIGURES 7, 8, 10 and 11 show a specific arrangement for an 85 foot flatcar of standard make in which the rack sections are each 27 feet 4 inches in length. The sill members 16*a* may be spaced apart a distance in the range of 34 to 40 inches, measuring from their outer extremities, as this is the range of spacing normally employed for the longitudinal framing members of highway vehicle chassis.

Similar remarks apply to the embodiment of FIGURES 16 and 16*a* with regard to latch devices 172, antifriction guide devices 14 and the lateral spacing of sill members 16*a*.

Hydraulic Cushion Device

The hydraulic cushion device 22, as already mentioned, is preferably that described in the copending application of William H. Peterson, Serial No. 782,786, now Patent No. 3,035,827, granted May 22, 1962 or that described in application Serial No. 9,785, filed February 19, 1960, now Patent 3,035,714, granted May 22, 1962 by the same inventor, the entire disclosure of the latter being also hereby incorporated herein by this reference. The device 22 is a dissipative energy system type constant force travel long travel cushioning mechanism arranged to transfer and dissipate substantially all kinetic energy imposed upon the car 10*a* by draft and buff forces applied to the car couplers (in excess of the minor amounts absorbed by the draft gear and return springs of the devices 22). This is to be distinguished from conservative energy system type cushioning devices that merely store the energy on impact and return same in the form of oscillations. As described in said Peterson application Serial No. 856,963, device 22 is a 100 percent efficient cushion travel device, meaning that it transfers and dissipates the required energy with minimum travel and with no uncontrolled recoil.

In other words, and as specified in said Peterson application Serial No. 856,963, the cushioning device 22 should have a travel of from about 20 inches to about 40 inches, or its equivalent, and be characterized by its ability to dissipate a sufficient amount of the energy of impact (other than that portion of such energy needed to recenter the cushioning device), either on closing of the device, or on closing and return of the device (note that the restricted flow of hydraulic liquid in cushioning device 22 on its return to normal is energy dissipating and thus cushion 22 has controlled recoil), so that the major portion of the remaining energy of impact is transmitted as kinetic energy to the load. Thus, in essence this makes the cushioning device 22 a dissipative energy system cushion as opposed to a conservative energy system cushion that stores and returns substantially all kinetic energy applied to it, although such dissipative energy system cushion should have sufficient energy storing and return characteristics to return the cushion and the rack to neutral or recenter position.

By employing the long travel cushioning device 22, the time required for the transfer of, for instance, the momentum of a striking car to a struck car (carrying the lading in question (is prolonged sufficiently to achieve the aforedescribed benefits that are disclosed in said Peterson application Serial No. 856,963.

The devices 22 illustrated each generally comprise (see FIGURES 21 and 22) a tubular cylinder 200 in which a piston head 201 is reciprocably mounted, a tubular piston rod 202 affixed to piston head 201, an invaginating tubular member or boot 207 connected between the tubular cylinder 200 and the tubular piston rod 202, and the helical compression springs 134 that extend between the closure members 130 and 132 of the tubular cylinder 200 and piston rod 202 and a spring seat 208.

The closure member 132 of tubular cylinder 200 carries a metering pin 209 that is reciprocably received within the bore 210 of the tubular piston rod 202. The metering pin 209 is preferably provided with a guide member 211 when the cushion of Peterson application Serial No. 782,786 is employed.

The internal surface 212 of tubular cylinder 200 is formed in any suitable manner as at 213 to receive three snap rings 214, 216 and 218. The snap ring 214 serves as a stop for piston head 201 when the device is in its extended position of FIGURE 21, while the snap rings 216 and 218 hold in place a piston rod guide member 220 to which one end 222 of the invaginating boot or tubular member 207 is secured by a suitable clamp 224. The other end 226 of the boot or tubular member 207 is turned outside in, and is secured to the external surface 228 of the piston rod 66 by a suitable clamp 230.

The device 22 is charged with hydraulic liquid as described in said copending application Serial No. 782,786 to completely fill the space defined by the tubular cylinder 200, the tubular piston rod 202, and the invaginating boot or tubular member 207. When in use, the device 22 has the normal positioning indicated in FIGURE 21, and in the illustrated arrangement, the device 22 (in the showing of FIGURES 21 and 22) engages the abutment members 100 and stop members 106 at both ends of cushioning assemblies 96. When the car 10*a* receives a shock either in buff or draft, either the tubular cylinder 200 will commence movement to the left of FIGURE 21 or the tubular piston rod 202 and piston head 201 will commence movement to the right of FIGURE 21, or possibly both movements may occur. In any event, as the device 22 retracts under the force being applied, the metering pin 209 displaces hydraulic liquid contained within the tubular piston rod 202 and the piston head 201 causes a hydraulic liquid flow through its orifice 232 through which the metering pin 209 extends. As shown, metering pin 209 is provided with a tapered surface 234 that preferably is designed to provide a constant force travel characteristic as the hydraulic cushion 22 contracts under the shock opposed on it; that is, the arrangement is such that for every unit of travel, the cushioning device provides a substantially constant cushioning effect.

As indicated in FIGURE 21, the oil flow then initiated is from the chamber 236 on the high pressure side of the piston head 201 through the orifice 232 and into the bore 210 of tubular piston rod 202, thence radially outwardly of the piston rod 202 through orifices or ports 238 of the tubular piston rod 202. As the hydraulic liquid within the tubular piston rod is displaced by the metering pin 209, it likewise moves through the ports 238, as indicated by the arrows in FIGURE 21. Metering pin guide member 211 is formed with relatively large apertures 240 to permit a free flow of hydraulic liquid during movement of the metering pin.

The hydraulic liquid flow through ports 238 is under

relatively high velocity and creates great turbulence in the chamber 242 that is formed by the space between the tubular piston rod guide member 220 and the piston head 201. This great turbulence is caused at least in part by the radically directed flow of hydraulic liquid impinging directly against the inner surface 212 of tubular cylinder 200, and is responsible for dissipation of much of the kinetic energy of the hydraulic liquid in the form of heat.

As the contraction of the hydraulic cushion device 22 proceeds, the high pressure chamber 236 is reduced in volume by the advancement of the piston head 201 toward the tubular cylinder closure member 132. The hydraulic liquid passing through orifice 232 fills the chamber 242 behind the piston head 201, while a volume of hydraulic liquid equivalent to that displaced by the total entry into the fluid chamber of the piston rod 202 passes through apertures 244 of guide member 220 into the space 246 enclosed by the invaginating boot or tubular member 207 which inflates or expands and rolls to the position suggested by FIGURE 22. The apertures 244 are relatively large in cross-sectional area which provides and permits the relatively large volume and consequently low pressure hydraulic liquid flow from chamber 242 to space 246. This avoids generation of any appreciable compressive force on the relatively slender metering pin and prevents any possibility of it buckling.

After the shock has been fully dissipated, the compression springs 134, acting in tandem, return the hydraulic cushioning components to the initial extended position of FIGURE 21. During this movement under the action of the compression springs, the oil flow illustrated in FIGURE 21 is reversed, and invaginating tubular member or boot 207 deflates and returns to the position of FIGURE 21 thereby insuring that the hydraulic liquid displaced by the piston head 201 and piston rod 202 is restored to its normal operative locations.

It will therefore be seen that not only is the device 22 composed of few and simple components, and that all sliding or dynamic seals are eliminated, but a reliable long travel cushioning action is provided. Furthermore, all kinetic energy applied to the cushion device, with the exception of the small potential energy stored in the return springs 134, is either dissipated in the form of heat by the passing of the hydraulic liquid through orifice 232 and the turbulence in chamber 242, or is transferred as kinetic energy (positive or negative, depending on the condition of impact) to the rack or platform with its load.

Reference may be had to said copending application Serial No. 782,786, for a more specific description of this unit. It may be added, however, that the tapering surface 234 of the metering pin 209 extends between points 250 and 252 (see FIGURE 21) and that the contour of tapered surface 234 in the illustrated embodiment is designed from the relationship $A_x=A_0\sqrt{1-x/d}$ wherein A_x is the orifice area of any position x (see FIGURE 24) along the total nominal stroke d (the length of the tapered surface 234), and A_0 is the initial orifice area defined by the orifice 232 at the beginning of a stroke, in the case where a completely rigid body is being cushioned from impact. While in most cases and for a given car weight this assumption will result in a reasonably efficient design, small alterations can be readily made to this shape to give it a closer approach to the optimum of constant force travel characteristic for a given situation after a few experimental trials. However, the shape given by the above formula is the best starting point. Furthermore, it is usually possible to obtain a reasonably efficient design by approximating the curved shape given by the above expression as by calculating a series of spaced cross-sectional areas so determined by straight tapers, if this facilitates manufacture. Moreover, the pin could be contoured so as to provide for the desired stroke of from about 20 to 40 inches while having a reserve stroke which would give a substantially higher force travel characteristic than that throughout the normal stroke, in order to protect against overloads or other unusually severe condition. In fact, there is no limit to the possibilities of how the pin might be shaped to suit special situations or the application of existing knowledge of this art. The orifice areas referred to are the orifice areas of orifice 232 minus the cross-sectional area of the metering pin at any given position along the stroke of the metering pin.

The components of the unit 22 may be formed from any suitable materials, boot 207 in the illustrated embodiment being formed from suitable impervious, flexible, rubber-like materials with special additives for low temperature flexibility and clamps 224 and 230 being of the type of clamp sold under the trademark "PUNCH-LOK," made and sold by the Punch-lok Company of Chicago, Illinois. The unit 22 of the illustrated embodiment may be charged with any appropriate high viscosity indexed liquid, such as the oil sold by Shell Oil Company under the trade designation AEROSHELL No. 4, as such liquids desirable have a relatively small variation in viscosity between the extremes of minus 60 degrees F. and 150 degrees F. The liquid employed should be of the type that will not attack the material from which boot 207 is made.

The hydraulic liquid when the device 22 is in fully extended position is under very little pressure, perhaps no more than 2 p.s.i., but even though the pressures in the high pressure chamber 236 may rise to as much as 8,000 p.s.i., as when the device is employed in railroad cars to cushion buff and draft forces, the maximum pressure within the invaginating boot 207 (when fully inflated) is believed to be about 10 p.s.i. Boot 207 stretches about 100 percent when fully inflated. Units 22 can be designed for operating pressures up to the limit of the yield strength of cylinder 200 and the device of FIGURES 21 and 22 when employed as indicated, is capable of handling kinetic energy on the order of a million foot pounds, depending, of course, on the specific design required for a specific purpose. Units 22 will thus easily handle 15 mile per hour impacts when applied to for instance, the railroad car structures of FIGURES 1–15.

Distinguishing Characteristics of the Invention

It will therefore be seen that we have provided a highly simplified railroad car arrangement for transporting either containers or trailers or both, which will provide the cushioning characteristics described in said Peterson application Serial No. 856,963, or which alternately may be employed in connection with a shorter travel cushion device where the ultimate in lading protection is not required.

Where the fifth wheel stand of our said concurrently filed application Serial No. 36,310 is employed in connection with the rack or platform 80, the stand is proportioned to lie within the plane of the rack or platform in its retracted position so that containers may be secured to the platform or rack over it, and trailers may be driven along the full length of the rack or platform to move them from car to car for loading and unloading purposes.

The rack or platform structure per se is simplified and in effect standardized for application to the different forms of cars, it only being necessary to provide the I beams 90 and abutment members 100 in the length desired to suit conditions. Where the rack is to be employed in connection with cars such as that shown in FIGURE 16, the distance between opposing abutment members 100 may be shortened since only travels on the order of 10 inches in either direction will be permitted by the rubber cushioning devices indicated in this figure.

Our invention is applicable to standard flatcars by

merely applying the antifriction support bracket assemblies 14 where necessary to a car deck and appropriately positioning the stop members 106 for cooperation with the cushion assemblies of the rack. It will be appreciated that the benefits of the invention disclosed in said Peterson application Serial No. 856,963 may be obtained with minimum expense by practicing the invention disclosed in this application.

The term "highway vehicle chassis longitudinal frame member spacing" as employed in the appended claims means the spacing customarily employed between the longitudinal frame members of highway trucks or chassis, which is in the range of between 34 and 40 inches.

The foregoing description and the drawings are given merely to explain and illustrate our invention and the invention is not to be limited thereto, except insofar as the appended claims are so limited, since those skilled in the art who have our disclosure before them will be able to make modifications and variations therein without departing from the scope of the invention.

We claim:

1. Apparatus for handling freight comprising a railroad car body, a carriage positioned on said body, means for mounting said carriage on said bed for movement longitudinally of said body, said carriage comprising a forward section, a center section, and a rearward section, said sections comprising spaced sills joined together by cross ties to have a highway vehicle chassis longitudinal frame member spacing, with said sills of said center section being aligned with and joined to the respective sills of said forward and rearward sections respectively, a cushioning assembly carried by said forward section adjacent the rearward end thereof and including a pair of cushioning devices spaced laterally of the car body and interposed between said forward section and the car body, a cushioning assembly carried by said rearward section adjacent the forward end thereof and including a pair of cushioning devices spaced laterally of the car body and interposed between said rearward section and the car body, said cushioning assemblies each comprising a pair of spaced cross tie members fixed between said sills of the respective forward and rearward sections and extending transversely of the car body, two pairs of longitudinally extending abutment members with one of said pairs of said abutment members being positioned adjacent and parallel to each of said sills of the respective forward and rearward sections and between said cross tie members thereof with the abutment members of the respective pairs of abutment members being aligned longitudinally of the car body and having like ends abutting said cross ties respectively, which like ends of each pair of abutment members project away from each other, said cushioning devices being respectively interposed between the other ends of said abutment members of the respective pairs of abutment members, and a pair of spaced stop members operatively associated with each of said cushioning devices, said stop members of each pair of stop members, respectively, being fixed with respect to the car body and engaging opposite ends of the respective cushioning devices.

2. The apparatus set forth in claim 1 wherein said abutment members are channel-shaped in cross-sectional configuration and house their respective stop members.

3. The apparatus set forth in claim 2 wherein said abutment members each have a laterally directed flange along their inner, longitudinally extending edges for reinforcing purposes, and including a tie plate affixed between the respective abutment members adjacent their cushion device contacting ends and the adjacent sill members of each of said sections, respectively.

4. The apparatus set forth in claim 1 wherein said cushioning devices have a closure travel in the range of 20–40 inches and one of said pair of cushioning devices comprises a pair of dissipative energy system type cushion devices having closure characteristics equivalent to a substantially constant force travel closure in the range of 20–40 inches, and wherein the other of said pair of cushioning devices comprises a pair of booster compression springs.

5. In a railroad flatcar vehicle impact absorbing arrangement for protecting a load carried by said vehicle, said arrangement comprising a flatcar, a rack positioned on the flatcar and comprising spaced elongate framing members extending longitudinally of the flatcar and connected together in parallel relation by spaced cross ties, means for mounting said rack on said car for movement longitudinally of the car, means for making the load fast to said members, said rack further comprising a pair of spaced cross members fixed between said framing members and extending perpendicular thereto, spaced pairs of abutment members respectively positioned adjacent to the respective framing members and with the abutment members of each pair of abutment members being aligned longitudinally of said framing members and spaced from each other, said abutment members of the respective pairs of abutment members being substantially channel-shaped in transverse cross-sectional configuration with the open sides thereof facing the vehicle and having like ends abutting the respective cross members, a cushion device interposed between the other ends of the abutment members of the respective pairs of abutment members for cushioning loads made fast to said rack against impacts acting longitudinally of said framing members, and a pair of spaced stop members operatively associated with each of said cushioning devices and respectively engaging opposite ends of the respective cushioning devices, said stop members being affixed to the vehicle and respectively disposed within the respective abutment members in the neutral position of said arrangement with respect to the vehicle.

6. The arrangement set forth in claim 5 wherein said stop members each comprise a pair of spaced lugs joined together by a bearing member, said bearing members contacting said cushioning devices, respectively, wherein said bearing members are formed with a vertical slot, and wherein the opposite ends of said cushioning devices are formed with a projection adapted to lodge in the respective bearing member slots when the respective cushion devices are in their operative positions in said arrangement.

7. The arrangement set forth in claim 6 wherein said abutment members are slotted at their said adjacent ends in vertical alignment with said slot of the respective bearing members to receive said projections of said cushioning devices respectively, and including a retainer member affixed over each of the respective abutment member slots.

8. Apparatus for handling freight comprising a railroad car body, a carriage positioned on said body, means for mounting said carriage on said body for movement longitudinally of said body, said carriage comprising a forward section, a center section, and a rearward section, said sections each comprising spaced sills joined together by cross ties to have a highway vehicle chassis longitudinal frame member spacing, a cushioning assembly carried by said forward section adjacent the rearward end thereof and including a cushioning device operatively interposed between said forward section and the car body, a cushioning assembly carried by said rearward section adjacent the forward end thereof and including a cushioning device operatively interposed between said rearward section and the car body, latch means for securing freight containers to said carriage, a fifth wheel stand assembly secured to said forward carriage section and carried by said section between said sills thereof adjacent the forward end thereof, and a fifth wheel stand assembly secured to said center carriage section and carried by said center section between said sills thereof adjacent the rearward end thereof.

9. Apparatus for handling freight comprising a railroad car body, a carriage positioned on said body, means for mounting said carriage on said body for movement longitudinally of said body, said carriage comprising a forward

section, a center section, and a rearward section, said sections each comprising spaced sills joined together by cross ties to have a highway vehicle chassis longitudinal frame member spacing, a cushioning assembly carried by said forward section adjacent the rearward end thereof and including a cushioning device operatively interposed between said forward section and the car body, a cushioning assembly carried by said rearward section adjacent the forward end thereof and including a cushioning device operatively interposed between said rearward section and the car body, means for securing freight containers to said carriage, a fifth wheel stand assembly secured to said forward carriage section and carried by said section between said sills thereof adjacent the forward end thereof, and a fifth wheel stand assembly secured to said center carriage section and carried by said center section between said sills thereof adjacent the rearward end thereof, said fifth wheel stand assemblies each comprising a kingpin latching device and a tripod type support therefor, said supports each comprising telescoping legs swingably secured

to said sections in tripod relation, respectively, and including a cross member secured between the sills of said forward and center sections under the respective kingpin latch devices on which the respective kingpin latch devices rest in the retracted position of said stand assemblies.

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