Jan. 9, 1968 C. J. JOHNSON ETAL 3,362,353

RETRACTABLE SUPPORT AND METHOD OF USING SAME

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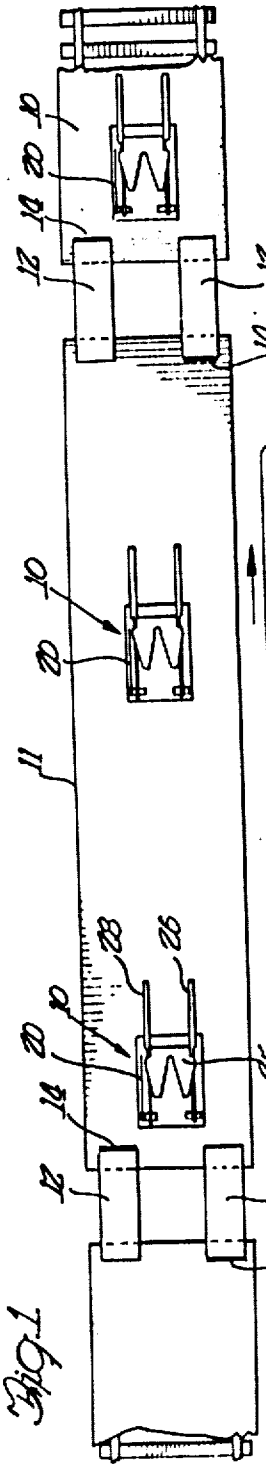


Fig. 1

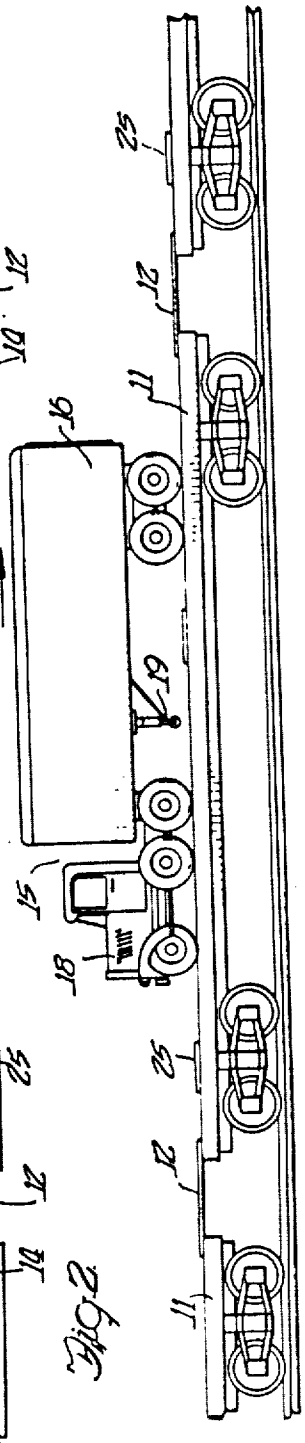


Fig. 2

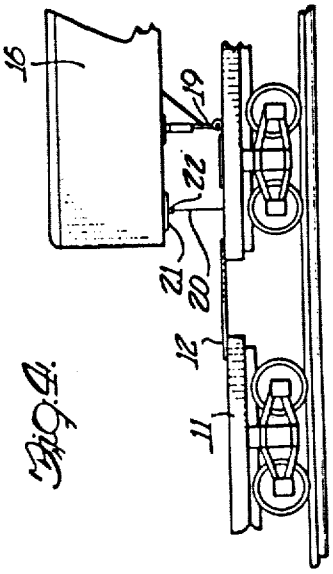


Fig. 4

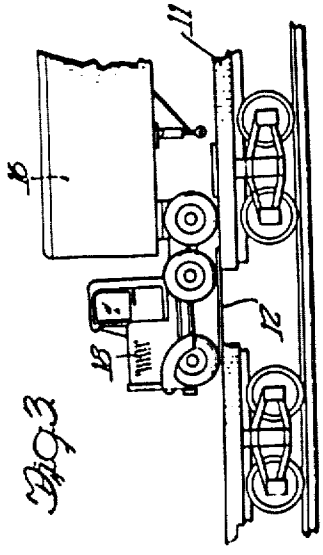


Fig. 3

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Fig. 5.

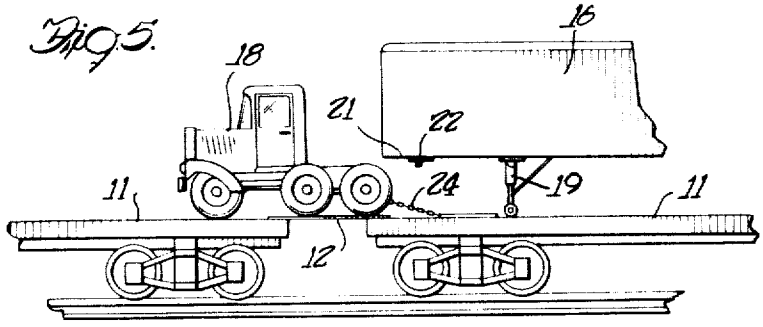


Fig. 6.

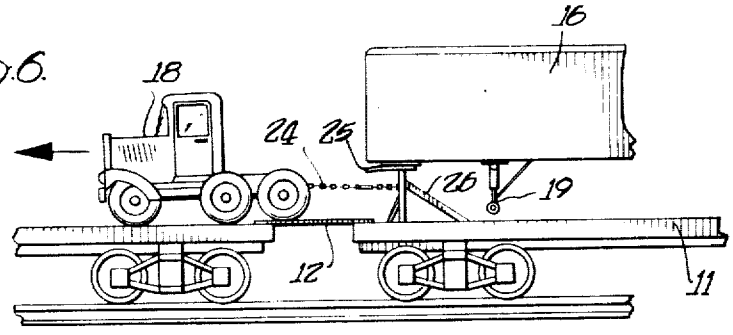
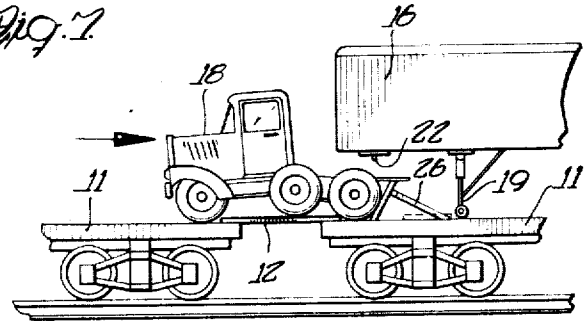


Fig. 7.



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Fig. 8.

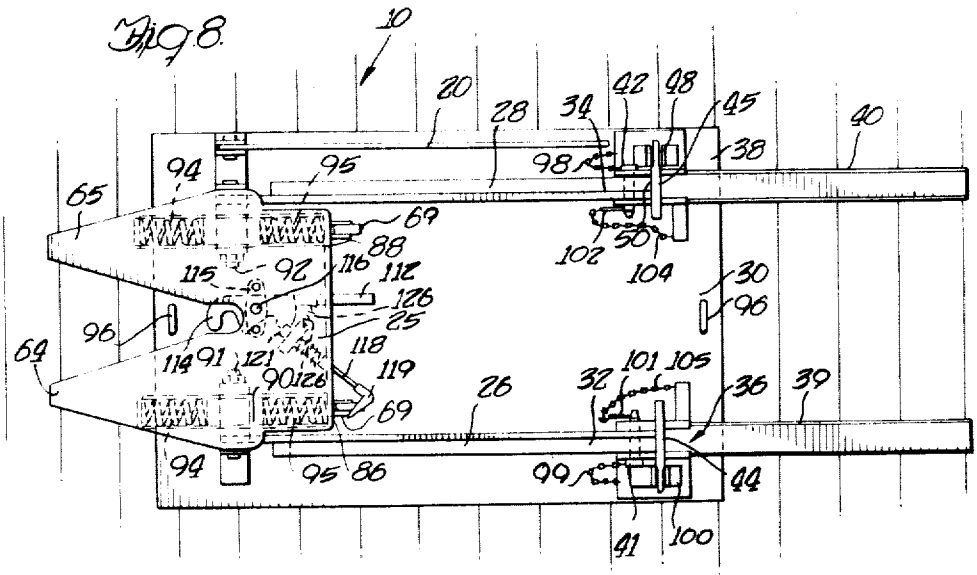
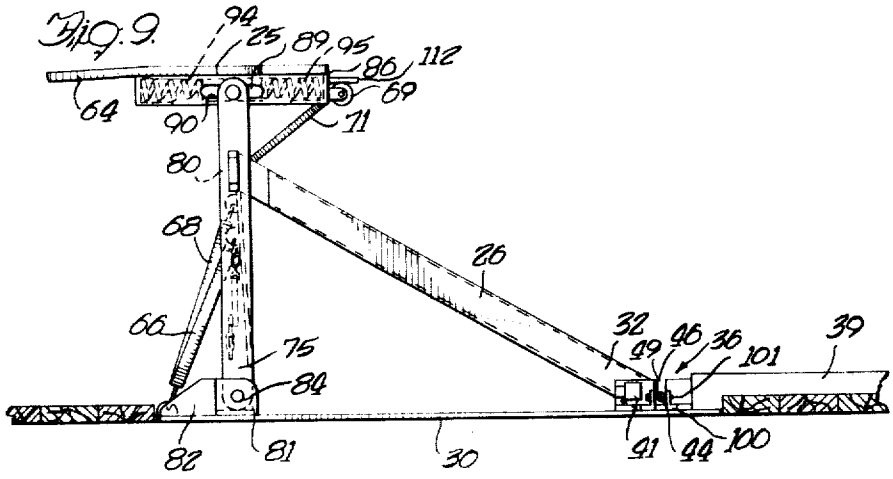


Fig. 9.



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Fig. 10.

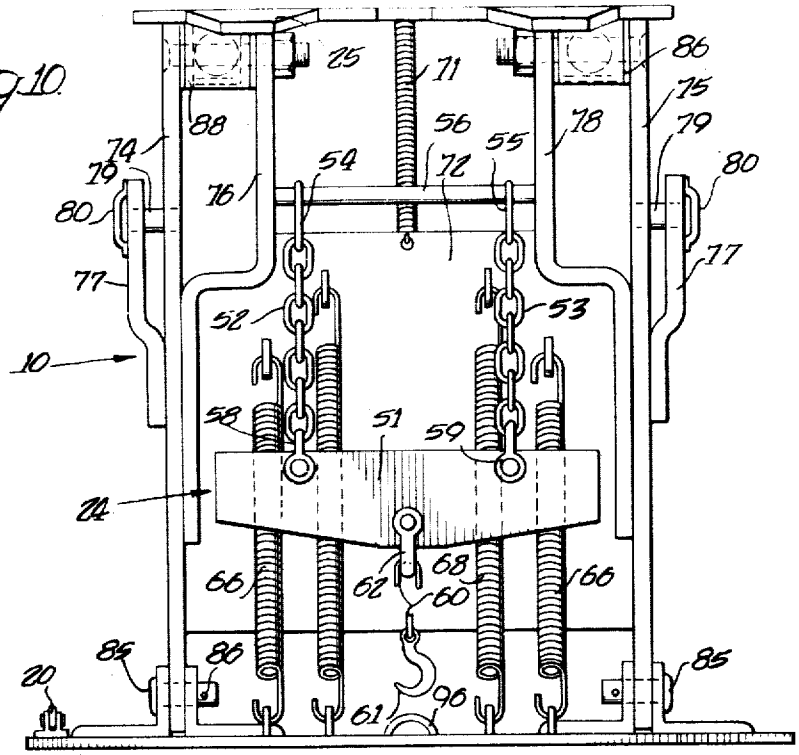
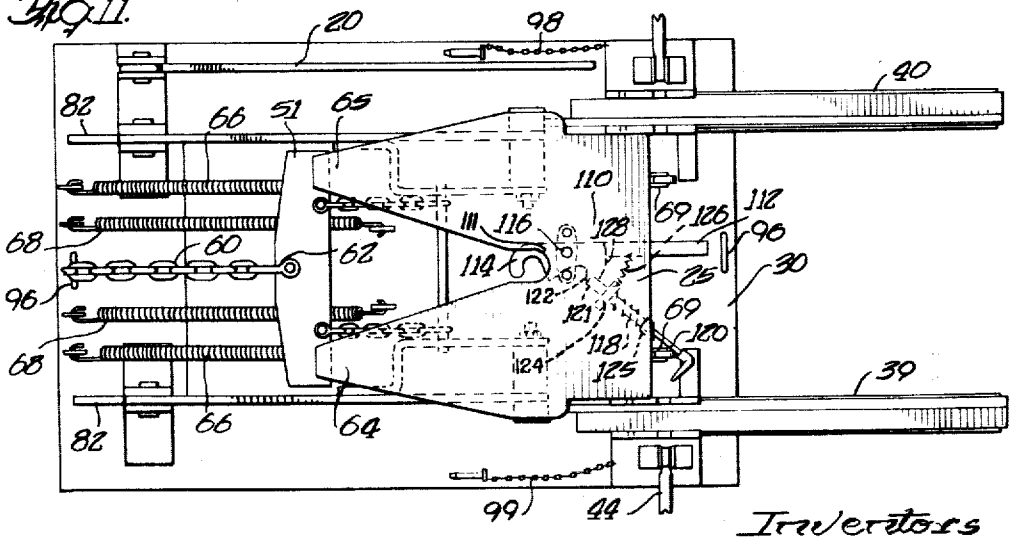


Fig. 11.



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3,362,353

RETRACTABLE SUPPORT AND METHOD OF USING SAME

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Continuation of application Ser. No. 392,671, Aug. 10, 1964, which is a continuation of application Ser. No. 698,970, Nov. 26, 1957. This application July 20, 1966, Ser. No. 566,630

27 Claims. (Cl. 105—368)

The present invention relates to a retractable support and to a method of using the same. More particularly it relates to such a support and method as can be used on a freight car in connection with the railway hauling of highway-type trailers, and this application is a continuation of our copending application, Ser. No. 392,671, filed Aug. 10, 1964, now abandoned, of the same title, which application was a continuation of copending application Ser. No. 698,970, filed Nov. 26, 1957, and having the same title.

In the transportation field, it is becoming increasingly more advantageous to transfer highway truck trailers to railway flat cars for certain hauls. Since the hauls vary in length, availability of returns, loading and unloading facilities at terminals, weather conditions and numerous other factors, the cars used for such work (commonly referred to as "Piggy-Back") must be extremely flexible, rugged, dependable, and simple. In addition, adequate protection for the highway vehicle must be provided against the shock loads attendant to making up trains, switching, humping cars, and the like.

In view of the foregoing, it is the general object of the present invention to provide a retractable support for highway vehicles which is simple, sturdy, and easy to operate. Another general object is to provide a novel method of loading a highway type trailer on a railway car. More specifically, it is an important object of the invention to furnish a flat car retractable support which lends itself to one-man operation, and to a method of carrying out such operation.

Of paramount importance is the provision of a retractable support which is safe to operate and which safely secures its load against upsetting along a right-of-way or in the path of another train.

Another object of the invention is to furnish a retractable support for mounting on a flat car which does not permanently convert the flat car from its general purpose function.

A more detailed objective of the invention is to utilize the power of the truck tractor which spots the trailer on the flat car to elevate the retracted support into engagemen with the trailer. Our invention therefore contemplates a system or method that so utilizes or employs the tractor power. Also, by the unique placement of springs, the objective of cushioned action in all phases of operation is achieved. Another objective of power-assisted ice breaking and joint freeing is also achieved by positioning the elements so that all moving parts are moved when the support is set up by the towing force.

Still another object of the invention is to furnish a retractable support adapted to engage its highway trailer load at the exact point and in the precise manner for which the highway trailer is designed, thereby minimizing damage to the trailer. A related object is also achieved by securing the trailer in the manner for which it is designed in that the support is as universal in its application as any towing tractor. A still further object of the invention is to provide a retractable support which rests on its associated flat car in such a manner that it does not

interfere with driving the tractors and trailers on and off the train throughout the length of the flat cars.

Further objects and advantages of the present invention will become apparent as the following description of an illustrative embodiment proceeds, taken in conjunction with the accompanying drawings, in which:

FIGURE 1 is a plan view, partially broken, of the top of a train of flat cars illustrating the location of the subject retractable supports.

FIG. 2 illustrates a truck and trailer backing onto the train shown in FIGURE 1.

FIG. 3 is a broken view of the truck and trailer shown in FIG. 2 as spotted for unloading.

FIG. 4 is a view similar to FIG. 3, showing the trailer after the tractor has been disengaged.

FIG. 5 is a view similar to FIGS. 3 and 4, illustrating the subsequent use of the tractor in raising the support mechanism.

FIG. 6, a view similar to FIGS. 3 through 5, shows the tractor serving as the power supply for engaging the trailer with the retractable support.

FIG. 7 is a view similar to the preceding series in FIGS. 3 through 6, illustrating how the tractor is used to retract the support device.

FIG. 8 is a top view of the retractable support in its extended, or up, position.

FIG. 9 is a front elevation of the retractable support as shown in FIG. 8.

FIG. 10 is a front elevation in enlarged scale of the retractable support as shown in the up, or engaged, position.

FIG. 11 is a top view of the retractable support shown in the retracted position.

In broad outline, a railroad car or flat car is fitted with the illustrative fifth wheel stand or retractable support **10**, depicted in the drawings and to be described in detail hereinafter, which includes or contemplates a fifth wheel plate structure or top plate **25** mounted on a vertical support and upon which the trailer **16** rests. The top plate **25** has a forwardly open jaw which engages the trailer king pin and locks it to the top plate. In addition to being hingedly mounted on one end of the lever forming strut, i.e., on the vertical support, the top plate also is spring cushioned in its mount to the support to accommodate shock loads. The other end of the vertical support is pivotally secured to the railroad car to swing from a lowered inoperative position to a raised operative position in which the fifth wheel plate structure or top plate is disposed in engagement with the kingpin of the vehicle. Trailing support links hinge to the vertical support and are removably locked at their free trailing ends to the base. A chain drawbar assembly **24** provided at the front of the vertical support permits attachment to the tractor to pull the support into locked engagement with the trailer after it has been spotted on the flat car. An additional counterweight spring assembly **29** cushions the retraction of the support and similarly assists in raising the support.

Before outlining the details of the retractable support illustrated in the accompanying drawings, it will be helpful to review the use of the retractable support in making up a trainload of piggy-back trailers. Referring now to FIGURE 1, it will be seen that the retractable supports **10** are located at one end, and where necessary, adjacent the middle of each railroad car or flat car **11**. Treadways **12**, having hinged ends **14**, are provided at the ends of each of the flat cars **11** so that a tractor and a trailer type freight vehicle or a trailer can drive from one end of the train to the other along the top of the flat cars **11**. Although it is not shown, the end car of the train abuts a ramp or flat dock, so that the truck trailer can be driven

directly onto the train. In normal operation, transporting of the truck trailer **15** into position is accomplished by backing it onto one end of the train and then by continuing to back it from there to a selected end of a selected car, as illustrated in FIG. 2. In operation, a relatively skilled driver can back a loaded truck trailer at a fast pace until it reaches the position where the trailer **16** is to be mounted, as shown in FIG. 3. Because the same driver will be loading several trailers onto the train, he will rapidly be able to gauge quite closely where to position or to spot the trailer in relation to the end of the flat car **11**. During the aforesaid steps of transporting and backing the fifth wheel or support plate remains depressed on the deck of the car in an inoperative position. After the trailer **16** has been spotted, as illustrated in FIG. 4, the trailer landing gear **19** is lowered onto the floor of the flat car **11** and raised so that the truck **18** can be disconnected or disengaged from the trailer **16**. A hinged gauge rod **20** is then raised up and the trailer **16** raised and lowered by means of its landing gear **19**, until the trailer support plate **21** and kingpin **22** are at approximately the elevation dictated by the gauge rod **20**.

The gauge rod is then dropped, and the tractor **18**, as illustrated in FIG. 5, is backed to a point where the chain assembly **24** can be hooked to the tractor **18**. The fifth wheel or top plate is then swung up into operative position by employing the motive power of the tractor to drive the tractor **18** forward, as shown in FIG. 6, until the retractable support **10** is in the vertical position and its top support plate **25** engages the support plate **21** and kingpin **22** of the trailer **16**. The trailing links **26**, **28** are then secured or releasably locked at their free ends, in a manner to be detailed hereinafter, and the trailer **18** is then securely locked to the flat car **11** in a manner most similar to its normal attachment to the tractor **18**.

When the trailers **16** are to be unloaded, the kingpin **22** is unlocked. The landing gear **19** is then dropped and the trailer **16** raised until the trailer support plate **21** is above the retractable support plate **25**. The trailing links **26**, **28** are then unlocked. The retractable support counterweight spring assembly **29** secures the mechanism against retraction. The tractor **18** is then backed in under the trailer and physically pushes the retractable support rearwardly until the spring-loaded assembly **29** no longer offsets the weight of the support, and thereafter full retraction is accomplished by gravity. The trailer **16** is then coupled to the tractor **18** by lowering the landing gear **19** just as would be done if the trailer **16** were stored in any freight yard.

The foregoing work can be accomplished by one man, and requires approximately seven minutes per trailer. No external winches, hoists, or other gear are required—the entire action being powered by the tractor itself. As will appear subsequently, the relationship between the chain assembly **24** and the top plate **25** is such that they combine to actuate the stiffened hinge joints of the retractable support **10**, and will even break loose a heavy coating of ice.

The details of construction are more clearly depicted in FIGS. 8 through 11. Referring now to FIG. 9, where the retractable support mechanism **10** is shown in its raised position, it will be seen that all of the elements of the retractable support are secured to a flat base plate **30**, formed advantageously from a steel plate. A vertical stand portion includes a support member in the form of vertical support bars **74**, **75** and a support or top late **25**. The trailing links **26**, **28** are secured at their trailing or free ends **32**, **34** by means of the locking mechanism **36**, **38**. A pair of guide channels **39**, **40** extend rearwardly from and are cooperatively attached to the locking mechanisms **36**, **38**.

The trailing links are locked in position by means of drift-type lock pins **41**, **42** which penetrate mating holes in the trailing links **26**, **28**. It will be observed that the butt pins **44**, **45** are pivoted at their ends on an axis near the midpoint of the trailing link guide channels **39**, **40**. Thus, prior to setting up, the butt pins **44**, **45** are flipped over the trailing links so that they will fall into the butt pin slots **46**, **48** after the ends **49**, **50** of the trailing links have passed the slots **46**, **48**. The butt pins then serve in locating the proper positioning of the support plate **25** when the retractable mechanism is pulled forward by the tractor **18**, as illustrated in FIG. 6. The trailing links are secured against backing up after the butt pins have dropped into the slots. The driver knows he has gone as far forward as he should when the vertical support runs up against the forward stop **82**. Thereafter, the driver backs the truck tractor **18** until it pushes gently against the retractable support mechanism **10**. This action shoves the far ends **49**, **50** of the trailing links **26**, **28** against the butt pins **44**, **45** when they serve their function as locators. At that point, the holes in the locking mechanism **36** and trailing links **26**, **28** will be registered in order to drive the drift-type locking pins **41**, **42** into position, thereby releasably locking the fifth wheel stand **10** in the raised operative position.

The chain drawbar assembly **24** is more fully illustrated in FIG. 10. The principal elements of the drawbar assembly **24** are the drawbar plate **51** to which a pair of anchor chains **52**, **53** are attached at the rear portion. The anchor chains **52**, **53** are secured at their rear portions by means of links **54**, **55** to a drawbar chain anchor **56**. The drawbar chain anchor **56** is a rod traversing the vertical support member of the retractable support. U-links **58**, **59** secure the drawbar chain **52**, **53** to the drawbar **51**. At its central portion and extending forwardly, the drawbar is attached to the draw chain **60** at the end of which is the draw chain hook **61**. A swiveled U-type link **62** secures the draw chain **60** to the drawbar **51**.

The length of the anchor chains **52**, **53** and the proportion of the drawbar **51** is such that the forward tips **64**, **65** of the support plate **25** overlap the drawbar when in the folded down position, as illustrated in FIG. 11. In this manner, the outer counterweight springs **66**, and the inner counterweight springs **68**, are protected from the points of the top plate in retraction. Most importantly, however, when the retractable support has been lying in the retracted position for some time in the yards, particularly in the winter, it may become clogged with ice, snow, dirt, and other debris. By locating the drawbar **51** beneath the tips **64**, **65** when the tractor commences pulling on the draw chain assembly **24**, as illustrated in FIG. 5, the first reaction is to raise the drawbar **51** against the top plate tips **64**, **65** and begin swiveling the top plate **25** about its hinged joints. A pair of rollers **69** provided at the rear edge of the top plate **25** contact the base plate **30** and the unit begins to rise. As the anchor chains **52**, **53** begin to take over directly on the drawbar **56**, any ice obstructions, or other freezing of the hinge points at the top plate, will have been freed so that the top plate will readily conform to its locked relationship with the support plate **21** and kingpin **22** of the trailer **16**. A leveling spring **71** attached to the rear underside of the top support plate **25** extends forwardly to the side sway support plate **72**. The leveling spring **71** serves to offset the out-of-balance effect which the forwardly extending tips **64**, **65** import to the top support plate **25**.

Referring now to FIG. 10 it will be seen that the vertical support assembly comprises a plurality of bent elements of flat stock, preferably welded together and tied against sway by the side sway support plate **72**. The backbone of the vertical support assembly is a pair of vertical support bars **74**, **75** to each of which an inner offset bar **76**, **78** is attached to define a hinge yoke assembly for the top plate hinge. The trailing link hinge yoke is defined by a second pair of offset bars **77** secured to the outside of the long vertical support bars **74**, **75**. The trailing link hinge pins **79**, which are inserted into bored holes in the trailing link hinge yoke, are held in

place by means of removable lock covers **80**. These lock covers **80** may be removed for lubricating, disassembling, and otherwise servicing the retractable support mechanism.

Referring now to FIG. 9, it will be seen that the vertical support leg **75** is hinged at its lower end to another hinge yoke assembly **81** which has a forward stop **82**. The lower end **84** of the vertical support leg **75** is rounded so that the vertical support leg can be moved into the vertical position, but is stopped at that point by the stop block **82**. Vertical support hinge pins **85** run through the hinge **81** and are provided with a safety pin hole **86**, or otherwise secured against lateral travel.

Because railroad cars are subjected to numerous shock loads resulting from starting, stopping, humping, flying, switching, and the like, a unique longitudinal floating arrangement is provided for the top plate **25**. Referring now to FIGS. 8 and 9, it will be seen that each of the hinge joints with the vertical supports **74**, **75** cooperates with a constrained pair of compression springs. Beneath the top plate **25** and between the yoke defined by the upper legs **74**, **76**; **75**, **78**; are a pair of longitudinal boxes **86**, **88**. These spring retaining boxes **86**, **88** are closed at both ends and provided with a pair of longitudinal hinge pin slots **89** at their midpoints. A floating spring abutment block **90**, bored through its mid-portion to receive the hinge pins **91**, **92** abuts the fore and aft compression springs **94**, **95**. Thus, irrespective of whether the shock load is from the front of the freight car or the rear of the freight car, or whether the trailer is traveling in a forward direction or a rearward direction, the floating longitudinal mount for the vertical support plate **25** will cushion the blow.

In the event the retractable support mechanism **10** is to be removed from its associated freight car, a pair of lifting rings **96** have been provided on the base plate **30**. Similarly, to facilitate operation, the lock pins **41**, **42** have been provided with lock pin chains **98**, **99** secured to the head of the lock pin and welded to the base of the retractable support to prevent the lock pins from becoming lost or inadvertently pocketed by the operators.

The butt pin bracket **100** similarly receives the butt pins **44**, **45** and the butt pin lock pin **101** secures the butt pins permanently in place. After the locking pins **41**, **42** have been inserted in place, the lock pin safety pins **101**, **102** are inserted in the hole provided therefor at the tapered end of the lock pins. Lock pin safety chains **104**, **105** secure the lock pin safety pins from removal.

In connection with locking the trailer kingpin **22** to the support plate **25**, an automatic kingpin lock mechanism **110** (illustrated in FIGS. 8 and 11) has been provided. The automatic kingpin lock mechanism contemplates a pivoted hook **111** which has an externally extending handle portion **112** and a hooked end portion **114**. The hook is supported by the hook pivot bracket **115** through which the hook pivot pin **116** is inserted. The pivoted hook lock mechanism **118** includes an unlocking externally extending handle **119** and an elongate shaft portion **120** which terminates in a locking block **121** which engages the locking shoulder **122** on the hook body **111**. The shaft **120** is mounted by means of the internal mounting bracket **124** and the external mounting bracket **125**. A compression spring **126** constantly urges the locking block **121** inwardly. The locking mechanism is shown in the locked position in FIG. 8. When the operator wishes to unlock the kingpin, he pulls the unlocking handle **119** which removes the lock block **121** from its contact with the locking hook shoulder **122**, and the unlocking spring **126** then pulls the locking hook handle toward the unlocking mechanism, which in turn removes the hooked end portion **114** from its engagement with the kingpin **22**. When the kingpin locking mechanism is sought to be locked, the kingpin is pushed rearwardly until it engages the rear portion of the locking hook which pivots the locking hook about its pivot hook **116**. The locking block **121** rides on the curved rear portion **128** of the locking hook until it snaps into place against the locking shoulder **122** on the lock device. Thus, the operator need at no atime while the mechanism is in motion be near the locking or unlocking devices, but rather enjoy the safety of the cab of his tractor. This feature additionally implements the one-man nature of the entire operation.

In review, it will be seen that the illustrated structure admits of single-handed operation in securing a highway trailer to a flat car for rail shipment. When retracted on the freight car, the silhouette of one commercial embodiment is less than 5 inches, which readily clears the 9-inch gap between the bottom of the banjo housing on the average truck tractor and the floor of the freight car. This low silhouette, devoid of upstanding hooks and the like, also clears trailer brake arms, air tanks, and other low-hanging appurtenances of the tractors and trailers. The unique orientation of the various chains, drawbar plate and springs, in folding, not only contribute to the low silhouette, but additionally assist in trouble-free, single-handed, raising of the support plate and engagement with the trailer. Finally, all elements have been firmly fixed to the retractable support **10** by safety chain and the like, so that the pins, stops, and the like, required for operation are at hand at any location.

Another aspect of the invention involves the method of utilizing the power of the truck tractor to position or spot the trailer on the flat car and then to elevate the retracted support from the inoperative position in or on the deck of the freight car to an operative position to engage the kingpin of the trailer. The method includes backing the tractor-trailer combination onto the railroad car, positioning the trailer so that the kingpin thereof is positioned for engagement by the top plate structure when the latter is raised to operative position, lowering the landing gear of the trailer to support the same, and then disconnecting the vehicle from the tractor followed by the steps of connecting the tractor to the retractable support **10** and employing the motive power of the tractor to swing the retractable support and more particularly the top plate into engagement with the kingspin. Subsequent to these operations the retractable support, or fifth wheel stand, is releasedly locked into its raised operative position.

What is claimed is:

1. For use on a freight car for carrying highway vehicles, a retractable support comprising, in combination, a base, a vertical stand portion, said vertical stand portion including a support member, and a support plate having pintle receiving means extending forwardly of the base, hinge means at the upper portion of the support member securing the support plate hingedly and intermediate its ends to the support member, second hinge means at the base of the support member securing said support member in hinged relation to the base for retraction rearwardly of the base, locking means cooperating with the pintle receiving means in the support plate to receive and secure a highway trailer locking pintle, a trailing support link extending rearwardly of the base, means hinging said trailing support link to the support member intermediate the ends thereof, locking means in spaced rearward relation to the vertical stand portion to removably receive and lock the free end of the trailing link, and a hitching member anchored to the vertical stand portion whereby a towing vehicle may be attached to the hitching member to pull the hinged vertical stand portion forwardly into locked relation with the associated highway vehicle whereupon the trailing link is fixed in place by the locking means to secure the highway vehicle to the freight car.

2. For use on a freight car for carrying highway vehicles, a retractable support comprising, in combination,

a base, a vertical stand portion, said vertical stand portion including a support member, and a support plate having an open jaw extending forwardly of the base; hinge means at the upper portion of the support member securing the support plate hingedly and intermediate its ends to the support member, second hinge means at the base of the support member securing said support member in hinged relation to the base for retraction rearwardly of the base, locking means cooperating with the open jaw in the support plate to receive and secure a highway trailer locking pintle, a trailing support link extending rearwardly of the base, means hinging said trailing support link to the support member intermediate the ends thereof, pivoted stop means secured to the base to rest atop the trailing link upon raising and fall in place at the free end of the trailing link when raising is completed, locking means in spaced rearward relation to the vertical stand portion to removably receive and lock the free end of the trailing link, and a hitching member anchored to the vertical stand portion whereby a towing vehicle may be attached to the hitching member to pull the hinged vertical stand portion forwardly into locked relation with the associated highway vehicle whereupon the trailing link is fixed in place by the locking means to secure the highway vehicle to the freight car.

3. For use on a freight car for carrying highway vehicles, a retractable support comprising, in combination, a base, a vertical stand portion, said vertical stand portion including a support member, and a support plate having an open jaw extending forwardly of the base; hinge means at the upper portion of the support member securing the support plate hingedly and intermediate its ends to the support member, second hinge means at the base of the support member securing said support member in hinged relation to the base for retraction rearwardly of the base, locking means cooperating with the open jaw in the support plate to receive and secure a highway trailer locking pintle, a pair of trailing support links extending rearwardly of the base, means hinging said trailing support links to the support member intermediate the ends thereof, a pair of guide channels on the base to receive the free ends of the trailing links and guide the same during retraction, locking means in spaced rearward relation to the vertical stand portion to removably receive and lock the free end of the trailing links, and a hitching member anchored to the vertical stand portion whereby a towing vehicle may be attached to the hitching member to pull the hinged vertical stand portion forwardly into locked relation with the associated highway vehicle whereupon the trailing links are fixed in place by the locking means to secure the highway vehicle to the freight car.

4. For use on a freight car for carrying highway vehicles, a retractable support comprising in combination, a base, a vertical stand portion, said vertical stand portion including a support member, and a support plate having pintle receiving means extending forwardly of the base; hinge means at the upper portion of the support member securing the support plate hingedly and intermediate its ends to the support member, second hinge means at the base of the support member securing said support member in hinged relation to the base for retraction rearwardly of the base, locking means cooperating with the pintle receiving means in the support plate to receive and secure a highway trailer locking pintle, a trailing support link extending rearwardly of the base, means hinging said trailing support link to the support member intermediate the ends thereof, locking means in spaced rearward relation to the vertical stand portion to removably receive and lock the free end of the trailing link, a hitching member anchored to the vertical stand portion, a draw bar on said hitching member, said draw bar being oriented on the hitching member to nest beneath the support plate upon retraction, whereby a towing vehicle may be attached to the hitching member to pull the hinged vertical stand portion forwardly into locked relation with the associated highway vehicle, the draw bar serving to raise the support plate, whereupon the trailing link is fixed in place by the locking means to secure the highway vehicle to the freight car.

5. For use on a freight car for carrying highway vehicles, a retractable support comprising, in combination, a base, a vertical stand portion, said vertical stand portion including a support member, and a support plate having an open jaw extending forwardly of the base; hinge means at the upper portion of the support member securing the support plate hingedly and intermediate its ends to the support member, second hinge means at the base of the support member securing said support member in hinged relation to the base for retraction rearwardly of the base, locking means cooperating with the open jaw in the support plate to receive and secure a highway trailer locking pintle, a trailing support link extending rearwardly of the base, means hinging said trailing support link to the support member intermediate the ends thereof, locking means in spaced relation to the vertical stand portion to removably receive and lock the free end of the trailing link, yieldable means secured to the vertical stand portion and base to counterweight the vertical stand portion in retraction and assist in raising the same, and a hitching member anchored to the vertical stand portion whereby a towing vehicle may be attached to the hitching member to pull the hinged vertical stand portion forwardly into locked relation with the associated highway vehicle whereupon the trailing link is fixed in place by the locking means to secure the highway vehicle to the freight car.

6. For use on a freight car for carrying highway vehicles, a retractable support comprising, in combination, a base, a vertical stand portion, said vertical stand portion including a support member, and a support plate having an open jaw extending forwardly of the base; hinge means at the upper portion of the support member securing the support plate hingedly and intermediate its ends to the support member, second hinge means at the base of the support member securing said support member in hinged relation to the base for retraction rearwardly of the base, locking means cooperating with the open jaw in the support plate to receive and secure a highway trailer locking pintle, a trailing support link extending rearwardly of the base, means hinging said trailing support link to the support member intermediate the ends thereof, locking means in spaced rearward relation to the vertical stand portion to removably receive and lock the free end of the trailing link, roller means at the rear of the support plate to engage the base upon retraction and hinge the support plate into its retracted relation with support member and trailing link, and a hitching member anchored to the vertical stand portion whereby a towing vehicle may be attached to the hitching member to pull the hinged vertical stand portion forwardly into locked relation with the associated highway vehicle whereupon the trailing link is fixed in place by the locking means to secure the highway vehicle to the freight car.

7. For use on a freight car for carrying highway vehicles, a retractable support comprising, in combination, a base, a vertical stand portion, said vertical stand portion including a support member, and a support plate having an open jaw extending forwardly of the base; hinge means at the upper portion of the support member securing the support plate hingedly and intermediate its ends to the support member, second hinge means at the base of the support member securing said support member in hinged relation to the base for retraction rearwardly of the base, locking means cooperating with the open jaw in the support plate to receive and secure a highway trailer locking pintle, a pair of trailing support links extending rearwardly of the base, a pair of chan-

nels on the base to receive and guide the trailing links during retraction, means hinging said trailing support links to the support member intermediate the ends thereof, locking means in spaced rearward relation to the vertical stand portion to removably receive and lock the free end of the trailing links, yieldable means secured to the base and vertical stand portion to resist retraction and assist in raising the vertical stand portion, and a hitching member anchored to the vertical stand portion whereby a towing vehicle may be attached to the hitching member to pull the hinged vertical stand portion forwardly into locked relation with the associated highway vehicle whereupon the trailing links are fixed in place by the locking means to secure the highway vehicle to the freight car.

8. For a use on a freight car for carrying highway vehicles, a retractable support comprising, in combination, a base, a vertical stand portion, said vertical stand portion including a support member, and a support plate having an open jaw extending forwardly of the base; hinge means at the upper portion of the support member securing the support plate hingedly and intermediate its ends to the support member, yieldable means connecting the rear portion of the support plate and the support member to urge the open jaw of the support plate upwardly, second hinge means at the base of the support member securing said support member in hinged relation to the base for retraction rearwardly of the base, locking means cooperating with the open jaw in the support plate to receive and secure a highway trailer locking pintle, a trailing support link extending rearwardly of the base, means hinging said trailing support link to the support member intermediate the ends thereof, locking means in spaced rearward relation to the vertical stand portion to removably receive and lock the free end of the trailing link, and a hitching member anchored to the vertical stand portion whereby a towing vehicle may be attached to the hitching member to pull the hinged vertical stand portion forwardly into locked relation with the associated highway vehicle whereupon the trailing link is fixed in place by the locking means to secure the highway vehicle to the freight car.

9. For use on a freight car for carrying highway vehicles, a retractable support comprising, in combination, a base, a vertical stand portion, said vertical stand portion including a support member, and a support plate having an open jaw extending forwardly of the base; hinge means at the upper portion of the support member securing the support plate hingedly and intermediate its ends to the support member, second hinge means at the base of the support member securing said support member in hinged relation to the base, locking means cooperating with the open jaw in the support plate to receive and secure a highway trailer locking pintle, a trailing support link, means hinging said trailing support link to the support member intermediate the ends thereof, locking means in spaced rearward relation to the vertical stand portion to removably receive and lock the free end of the trailing link, and a hitching member anchored to the vertical stand portion whereby a towing vehicle may be attached to the hitching member to pull the hinged vertical stand portion forwardly into locked relation with the associated highway vehicle whereupon the trailing link is fixed in place by the locking means to secure the highway vehicle to the freight car.

10. A retractable support comprising, in combination, a base, a vertical stand portion, said vertical stand portion including a support member, and a support plate having an open jaw extending forwardly of the base; hinge means at the upper portion of the support member securing the support plate hingedly and intermediate its ends to the support member, second hinge means at the base of the support member securing said support member in hinged relation to the base for retraction rearwardly of the base, locking means cooperating with the open jaw in the support plate, a trailing support link extending rearwardly of the base, means hinging said trailing support link to the support member intermediate the ends thereof, locking means in spaced rearward relation to the vertical stand portion to removably receive and lock the free end of the trailing link, and a hitching member anchored to the vertical stand portion whereby the hinged vertical stand portion may be pulled forwardly and the trailing link is fixed in place by the locking means.

11. For use on a freight car for carrying highway vehicles, a retractable support comprising, in combination, a base, a vertical stand portion, said vertical stand portion including a support member, and a support plate having pintle receiving means extending forwardly of the base; hinge means at the upper portion of the support member securing the support plate hingedly to the support member, second hinge means at the base of the support member securing said support member in hinged relation to the base for retraction rearwardly of the base, locking means cooperating with the pintle receiving means in the support plate to receive and secure a highway trailer locking pintle, a trailing support link extending rearwardly of the base, said link having a hinged end and a locking end, means hinging said trailing support link at its hinged end to the support member intermediate the ends thereof, locking means in spaced rearward relation to the vertical stand portion to receive and lock the locking end of the trailing link, and hitching means secured to the vertical stand portion whereby the hitching means may be attached to a towing vehicle to pull the hinged vertical stand portion forwardly into locked relation with the associated highway vehicle whereupon the trailing link is fixed in place by the locking means to secure the highway vehicle to the freight car.

12. For use on a freight car for carrying highway vehicles, a retractable support comprising, in combination, a base, a vertical stand portion, said vertical stand portion including a support member, and a support plate having pintle receiving means extending forwardly of the base; hinge means at the upper portion of the support member securing the support plate hingedly to the support member, second hinge means at the base of the support member securing said support member in hinged relation to the base for retraction rearwardly of the base, locking means cooperating with the pintle receiving means in the support plate to receive and secure a highway trailer locking pintle, a trailing support link extending rearwardly of the base, said link having a hinged end and a locking end, means hinging said trailing support link at its hinged end to the support member intermediate the ends thereof, locking means to spaced rearward relation to the vertical stand portion to receive and lock the free end of the trailing link, means yieldable to fore and aft motion between the pintle locking means and the base, and a hitching member secured to the vertical stand portion whereby the hitching member may be attached to a towing vehicle to pull the hinged vertical stand portion forwardly into locked relation with the associated highway vehicle whereupon the trailing link is fixed in place by the locking means to secure the highway vehicle to the freight car.

13. A retractable support comprising, in combination, a base, a vertical stand portion, said vertical stand portion including a support member, and a support plate having an open jaw extending forwardly of the base; first hinge means at the upper portion of the support member securing the support plate hingedly to the support member, second hinge means at the base of the support member securing said support member in hinged relation to the base for retraction rearwardly of the base, locking means cooperating with the open jaw in the support plate, yieldable means in the support plate between the locking means and the first hinge means to cushion the support plate against fore and aft motion, a trailing support link extending rearwardly of the base, means hinging said trailing support link to the support member intermediate

the ends thereof, locking means in spaced rearward relation to the vertical stand portion to receive and lock the free end of the trailing link, and a hitching member attached to the vertical stand portion whereby the hinged vertical stand portion may be pulled forwardly and the trailing link is fixed in place by the locking means.

14. In combination with a railroad car, a retractable support for a trailer having a kingpin for connecting to the fifth wheel of a tractor, said support comprising the combination of a fifth wheel stand that includes a fifth wheel plate having an open kingpin receiving jaw extending forwardly; kingpin locking means carried by said fifth wheel plate for releasably engaging a trailer kingpin responsive to positioning of said kingpin within said jaw; a base for connection to the railroad car; and a lever forming strut hingedly connected at one end to said base and hingedly connected at the opposite end to said fifth wheel plate, said strut being swingable from a lowered inoperative position to a raised vertical operative position in a direction the same as said open jaw; and means connected to said fifth wheel stand for effecting a detachable connection to a tractor; link means hingedly connected to said fifth wheel stand for assuming a diagonal position relative to said base and said lever forming strut in response to movement of said lever forming strut to a vertical position; guide means supported on said base and engaging said link means for slidably guiding and supporting said link means; whereby said fifth wheel stand is elevated from a lowered inoperative position to a raised operative position by connecting said means for effecting a connection to a tractor and applying the motive force of the tractor in the direction of said open jaw; and latch means for retaining said retractable support in its raised operative position, said latch means being movable to its engaged position in response to movement of said retractable support into its raised operative position to retain said retractable support in its raised operative position.

15. In combination with a vehicle for carrying and transporting trailers, a retractable support for a trailer having a kingpin for connecting to the fifth wheel of a tractor, said support comprising the combination of a fifth wheel stand that includes a fifth wheel plate having an open kingpin receiving jaw extending forwardly; kingpin locking means, carried by said fifth wheel plate, for releasably engaging a trailer kingpin responsive to positioning of said kingpin within said jaw; a base for connection to the vehicle for carrying and transporting trailers; and a lever forming strut hingedly connected at one end to said base and hingedly connected at the opposite end to said fifth wheel plate, said strut being swingable from a lowered inoperative position to a raised vertical operative position in a direction the same as said open jaw; and means connected to said fifth wheel stand for effecting a detachable connection to a tractor; link means hingedly connected to said fifth wheel stand, for assuming a diagonal position relative to said base and said lever forming strut in response to movement of said lever forming strut to a vertical position; and guide means supported on said base and engaging said link means for slidably guiding and supporting said link means; whereby said fifth wheel stand is elevated from a lowered inoperative position to a raised operative position by connecting said means for effecting a connection to a tractor and applying the motive force of the tractor in the direction of said open jaw.

16. In combination with a railroad car adapted to be connected to a series of such cars to form a train of cars adapted to carry trailers which are driven thereon by a tractor to which the trailer is connected by a kingpin at the forward end of the trailer and connected to the fifth wheel of the tractor, a retractable support mounted on said car for supporting said forward end of said trailer and comprising a fifth wheel stand including a fifth wheel plate having a kingpin receiving jaw opening, kingpin locking means carried by said fifth wheel plate for releasably engaging a trailer kingpin responsive to positioning of said kingpin within said jaw, and a lever forming strut hingedly connected at one end to said fifth wheel plate, means mounting its opposite end on said car for pivotal movement relative thereto from a lowered inoperative position to a raised operative position and in a direction the same as that in which said jaw opening faces, link means hingedly connected to said fifth wheel stand for assuming a diagonal position relative to said lever forming strut and said car in response to movement of said lever forming strut to said raised operative position, guide means supported on said car and engaging said link means for slidably guiding and supporting said link means, and means connected to said fifth wheel stand for effecting a detachable connection to a tractor used to spot said trailer on said railroad car and which is on the train of cars adjacent said forward end of said trailer for pulling said fifth wheel stand from its said lowered inoperative position to its said raised operative position and in the direction said open jaw faces, in response to movement of said tractor as it moves away from said trailer.

17. A railroad car adapted to carry a trailer which is driven thereon by a tractor to which the trailer is connected by a kingpin at the forward end of the trailer and connected to the fifth wheel of the tractor comprising a railroad car body adapted to have a trailer driven thereon, a retractable support mounted on said car for supporting said forward end of said trailer and comprising a fifth wheel stand including a fifth wheel plate having a kingpin receiving jaw opening, kingpin locking means carried by said fifth wheel plate for releasably engaging a trailer kingpin responsive to positioning of said kingpin within said jaw, and a lever forming, strut hingedly connected at one end to said fifth wheel plate, means mounting its opposite end on said car body for pivotal movement relative thereto from a lowered inoperative position to a raised operative position and in a direction the same as that in which said jaw opening faces, link means hingedly connected to said fifth wheel stand for assuming a diagonal position relative to said lever forming strut and said car body in response to movement of said lever forming strut to said raised operative position, guide means on said car body and engaging said link means for slidably guiding and supporting said link means, and means connected to said fifth wheel stand for effecting a detachable connection to a tractor used to spot said trailer on said railroad car and which is at least partially on said car and adjacent said forward end of said trailer for pulling said fifth wheel stand from its said lowered inoperative position to its said raised operative position and in the direction said jaw opening faces in response to movement of said tractor as it moves away from said trailer.

18. A railroad car adapted to carry a trailer which is driven thereon by a tractor to which the trailer is connected by a kingpin at the forward end of the trailer and connected to the fifth wheel of the tractor comprising a railroad car body adapted to have a trailer driven thereon, a retractable support mounted on said car for supporting the forward end of the trailer and comprising a fifth wheel stand including a fifth wheel plate having a kingpin receiving jaw opening facing longitudinally of said car, kingpin locking means carried by said fifth wheel plate for releasably engaging a trailer kingpin responsive to positioning of said kingpin within said jaw, and a lever forming strut hingedly connected at one end to said fifth wheel plate, means mounting its opposite end on said car body for pivotal movement in a vertical plane extending longitudinally of said car from a lowered inoperative position to a raised operative position and in a direction the same as that in which said jaw opening faces, link means hingedly connected to said fifth wheel stand for assuming a diagonal position relative to said lever forming strut and said car body in response to movement of said lever forming strut to said raised operative position,

guide means on said car body and engaging said link means for slidably guiding and supporting said link means, latch means for retaining said retractable support in its raised operative position, and means connected to said fifth wheel stand for effecting a detachable connection to a tractor used to spot said trailer on said railroad car and which is adjacent said forward end of said trailer and in line with said fifth wheel stand and in said plane of movement thereof for pulling said fifth wheel stand from its said lowered inoperative position to its said raised operative position and in the direction said jaw opening faces in response to movement of said tractor as it moves away from said trailer, said latch means being movable to its engaged position in response to movement of said retractable support into its raised operative position to retain said retractable support in its raised operative position.

19. A railroad car adapted to carry a trailer which is driven thereon by a tractor to which the trailer is connected by a kingpin at the forward end of the trailer and connected to the fifth wheel of the tractor comprising a railroad car body adapted to have a trailer driven therealong, a retractable support mounted on said car for supporting said forward end of said trailer and comprising a fifth wheel stand including a fifth wheel plate having a kingpin receiving opening, kingpin locking means carried by said fifth wheel plate for releasably engaging a trailer kingpin received in said opening, and a lever forming strut hingedly connected at one end to said fifth wheel plate, means mounting its opposite end on said car body for pivotal movement in a vertical plane extending longitudinally of said car from a lowered inoperative position to a raised operative position, link means hingedly connected to said fifth wheel stand for assuming a diagonal position relative to said lever forming strut and said car body in response to movement of said lever forming strut to said raised operative position, guide means on said car body and engaging said link means for slidably guiding and supporting said link means, and means connected to said fifth wheel stand for effecting the detachable connection to a tractor used to spot said trailer on said railroad car and which is at least partially on said car in line with said fifth wheel stand and in said plane of movement thereof and adjacent said forward end of said trailer for pulling said fifth wheel stand from its said lowered inoperative position to its said raised operative position in response to movement of said tractor as it moves away from said trailer.

20. For use on a railroad car adapted to be connected to a series of such cars to form a train of cars adapted to carry trailers which are driven thereon by a tractor to which the trailer is connected by a kingpin at the forward end of the trailer and connected to the fifth wheel of the tractor, a retractable support adapted to be mounted on said car for supporting said forward end of said trailer and comprising a fifth wheel stand including a fifth wheel plate having a kingpin receiving jaw opening, kingpin locking means carried by said fifth wheel plate for releasably engaging a trailer kingpin responsive to positioning of said kingpin within said jaw, and a lever forming strut hingedly connected at one end to said fifth wheel plate, means for mounting its opposite end on said car for pivotal movement relative thereto from a lowered inoperative position to a raised operative position and in a direction the same as that in which said jaw opening faces, link means hingedly connected to said fifth wheel stand for assuming a diagonal position relative to said lever forming strut and said car in response to movement of said lever forming strut to said raised operative position, guide means adapted to be supported on said car and engaging said link means for slidably guiding and supporting said link means, and means connected to said fifth wheel stand for effecting a detachable connection to a tractor used to spot said trailer on said railroad car and which is on the train of cars adjacent said forward end of said trailer for pulling said fifth wheel stand from its said lowered inoperative position to its said raised operative position and in the direction said open jaw faces in response to said tractor as it moves away from said trailer.

21. For use on a railroad car adapted to carry a trailer which is driven thereon by a tractor to which the trailer is connected by a kingpin at the forward end of the trailer and connected to the fifth wheel of the tractor, a retractable support adapted to be mounted on said car for supporting said forward end of said trailer and comprising a fifth wheel stand including a fifth wheel plate having a kingpin receiving jaw opening, kingpin locking means carried by said fifth wheel plate for releasably engaging a trailer kingpin responsive to positioning of said kingpin within said jaw, and a lever forming strut hingedly connected at one end to said fifth wheel plate, means for mounting its opposite end on said car for pivotal movement relative thereto from a lowered inoperative position to a raised operative position and in a direction the same as that in which said jaw opening faces, link means hingedly connected to said fifth wheel stand for assuming a diagonal position relative to said lever forming strut and said car in response to movement of said lever forming strut to said raised operative position, guide means adapted to be mounted on said car and engaging said link means for slidably guiding and supporting said link means, and means connected to said fifth wheel stand for effecting a detachable connection to a tractor used to spot said trailer on said railroad car and which is at least partially on said car and adjacent said forward end of said trailer for pulling said fifth wheel stand from its said lowered inoperative position to its said raised operative position and in the direction said jaw opening faces in response to movement of said tractor as it moves away from said trailer.

22. For use on a railroad car adapted to carry a trailer which is driven thereon by a tractor to which the trailer is connected by a kingpin at the forward end of the trailer and connected to the fifth wheel of the tractor, a retractable support adapted to be mounted on said car for supporting the forward end of the trailer and comprising a fifth wheel stand including a fifth wheel plate having a kingpin receiving opening facing longitudinally of said car, kingpin locking means carried by said fifth wheel plate for releasably engaging a trailer kingpin responsive to positioning of said kingpin within said jaw, and a lever forming strut hingedly connected at one end to said fifth wheel plate, means for mounting its opposite end on said car for pivotal movement in a vertical plane extending longitudinally of said car from a lowered inoperative position to a raised operative position and in a direction the same as that in which said jaw opening faces, link means hingedly connected to said fifth wheel stand for assuming a diagonal position relative to said lever forming strut and said car in response to movement of said lever forming strut to said raised operative position, guide means adapted to be mounted on said car and engaging said link means for slidably guiding and supporting said link, latch means for retaining said retractable support in its raised operative position and means connected to said fifth wheel stand for effecting a detachable connection to a tractor used to spot said trailer on said railroad car and which is adjacent said forward end of said trailer and in line with said fifth wheel stand and in said plane of movement thereof for pulling said fifth wheel stand from its said lowered inoperative position to its said raised operative position and in the direction said jaw opening faces in response to movement of said tractor as it moves away from said trailer, said latch means being movable to its engaged position in response to movement of said retractable support into its raised operative position to retain said retractable support in its raised operative position.

23. For use on a railroad car adapted to carry a trailer which is driven thereon by a tractor to which the trailer is connected by a kingpin at the forward end of the trailer and connected to the fifth wheel of the tractor, a retract-

able support adapted to be mounted on said car for supporting said forward end of said trailer and comprising a fifth wheel stand including a fifth wheel plate having a kingpin receiving opening, kingpin locking means carried by said fifth wheel plate for releasably engaging a trailer kingpin received in said opening, and a lever forming strut hingedly connected at one end to said fifth wheel plate, means for mounting its opposite end on said car for pivotal movement in a vertical plane extending longitudinally of said car from a lowered inoperative position to a raised operative position, link means hingedly connected to said fifth wheel stand for assuming a diagonal position relative to said lever forming strut and said car in response to movement of said lever forming strut to said raised operative position, guide means adapted to be mounted on said car and engaging said link means for slidably guiding and supporting said link means, and means connected to said fifth wheel stand for effecting a detachable connection to a tractor used to spot said trailer on said railroad car and which is at least partially on said car in line with said fifth wheel stand and in said plane of movement thereof and adjacent said forward end of said trailer for pulling said fifth wheel stand from said lowered inoperative position to its said raised operative position in response to movement of said tractor as it moves away from said trailer.

24. For use on a railroad car adapted to carry a trailer which is driven thereon by a tractor to which the trailer is connected by a kingpin at the forward end of the trailer and connected to the fifth wheel of the tractor, a retractable support adapted to be mounted on said car for supporting said forward end of said trailer and comprising a fifth wheel stand including a fifth wheel plate having a kingpin receiving opening, kingpin locking means carried by said fifth wheel plate for releasably engaging a trailer kingpin received in said opening, and a lever forming strut hingedly connected at one end to said fifth wheel plate, means for mounting its opposite end on said car for pivotal movement in a vertical plane extending longitudinally of said car from a lowered inoperative position to a raised operative position, link means hingedly connected at one of its ends to said fifth wheel stand for assuming a diagonal position relative to said lever forming strut and said car in response to movement of said lever forming strut to said raised operative position, guide means adapted to be mounted on said car and engaging the other end of said link means for guiding and supporting said other end of said link means for movement of said other end longitudinally of said car from a retracted position to an operative position in a predetermined path upon movement of said lever forming strut to said raised operative position, and means connected to said fifth wheel stand for effecting a detachable connection to a tractor used to spot said trailer on said railroad car and which is at least partially on said car in line with said fifth wheel stand and in said plane of movement thereof and adjacent said forward end of said trailer for pulling said fifth wheel stand from its said lowered inoperative position to its said raised operative position in response to movement of said tractor as it moves away from said trailer.

25. In combination with a vehicle for carrying and transporting trailers, a retractable support for a trailer having a kingpin for connection to the fifth wheel of a tractor, said support including a fifth wheel plate having an open kingpin receiving jaw, kingpin locking means for releasably engaging a trailer kingpin received within said jaw, means operatively connected to the vehicle for supporting and guiding said fifth wheel plate for movement in a predetermined path and in the direction of the open jaw faces from a retracted storage position adjacent the vehicle to an erected operative position for engagement of a trailer kingpin by said kingpin locking means, said supporting and guiding means supporting and guiding said plate for movement in the direction opposite to the direction in which the jaw faces from the erected position to the retracted position, latch means for retaining said fifth wheel plate in its erected operative position, and means for providing a detachable connection between said tractor and said retractable support for erecting said fifth wheel plate from its retracted position to its operative position in response to movement of said tractor as it moves away from said trailer, the movement of said fifth wheel plate from its storage to its operative position taking place in the same direction as the direction of movement of said tractor away from said trailer, said latch means being movable to its engaged position in response to movement of said fifth wheel plate into its operative position to retain said fifth wheel plate in its operative position.

26. In combination with a vehicle for carrying and transporting trailers, a retractable support for a trailer having a kingpin for connection to the fifth wheel of a tractor, said support including a fifth wheel plate having an open kingpin receiving jaw, kingpin locking means for releasably engaging a trailer kingpin received within said jaw, means operatively connected to the vehicle for supporting and guiding said fifth wheel plate for movement in a predetermined path and in the direction the open jaw faces from a retracted storage position adjacent the vehicle to an erected operative position for engagement of a trailer kingpin by said kingpin locking means, said supporting and guiding means supporting and guiding said plate for movement in the direction opposite to the direction in which the jaw faces from the erected position to the retracted position, stop means for limiting the movement of said fifth wheel plate from its retracted position to its erected operative position, latch means for retaining said fifth wheel plate in its erected operative position, and means for providing a detachable connection between said tractor and said retractable support for erecting said fifth wheel plate from its retracted position to its operative position in response to movement of said tractor as it moves away from said trailer, the movement of said fifth wheel plate from its storage to its operative position taking place in the same direction as the direction of movement of said tractor away from said trailer, said stop means being effective to preclude further movement of said fifth wheel plate in the direction of movement of the tractor when said fifth wheel plate reaches its erected operative position, said latch means being movable to its engaged position in response to movement of said fifth wheel plate into its operative position to retain said fifth wheel plate in its operative position.

27. In combination with a vehicle for carrying and transporting trailers, a retractable support for a trailer having a kingpin for connection to the fifth wheel of a tractor, said support including a fifth wheel plate having an open kingpin receiving jaw, kingpin locking means for releasably engaging a trailer kingpin received within said jaw, means operatively connected to the vehicle for supporting and guiding said fifth wheel plate for movement in a predetermined path and in the direction the open jaw faces from a retracted storage position adjacent the vehicle to an erected operative position for engagement of a trailer kingpin by said kingpin locking means, said supporting and guiding means supporting and guiding said plate for movement in the direction opposite to the direction in which the jaw faces from the erected position to the retracted position, stop means for limiting the movement of said fifth wheel plate from its retracted position to its erected operative position, latch means for retaining said fifth wheel plate in its erected operative position, and resilient cushioning means interposed between said kingpin locking means and the vehicle for cushioning the connection between the trailer kingpin and the transporting vehicle provided for by said retractable support, and means for providing a detachable connection between said tractor and said retractable support for erecting said

fifth wheel plate from its retracted position to its operative position in response to movement of said tractor as it moves away from said trailer, the movement of said fifth wheel plate from its storage to its operative position taking place in the same direction as the direction of movement of said tractor away from said trailer, said stop means being effective to preclude further movement of said fifth wheel plate in the direction of movement of the tractor when said fifth wheel plate reaches its erected operative position, said latch means being movable to its engaged position in response to movement of said fifth wheel plate into its operative position to retain said fifth wheel plate in its operative position.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,362,353

January 9, 1968

Clarence J. Johnson et al.

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 3, line 67, for "late" read -- plate --; column 6, line 6, for "atime" read -- time --; line 45, for "spin" read -- pin --; column 10, line 51, for "to", first occurrence, read -- in --; column 12, line 30, for "reeciving" read -- receiving --; same line 30, for "copening" read -- opening --; column 13, line 40, for "the" read -- a --; column 14, line 3, after "to" insert -- movement of --; column 18, line 5, after "Dorsey" insert -- , Jr. --.

Signed and sealed this 11th day of February 1969.

(SEAL)

Attest:

Edward M. Fletcher, Jr.

Attesting Officer

EDWARD J. BRENNER

Commissioner of Patents