Dec. 28, 1965 D. W. ROLLINS ETAL 3,225,707

COLLAPSIBLE SUPPORT

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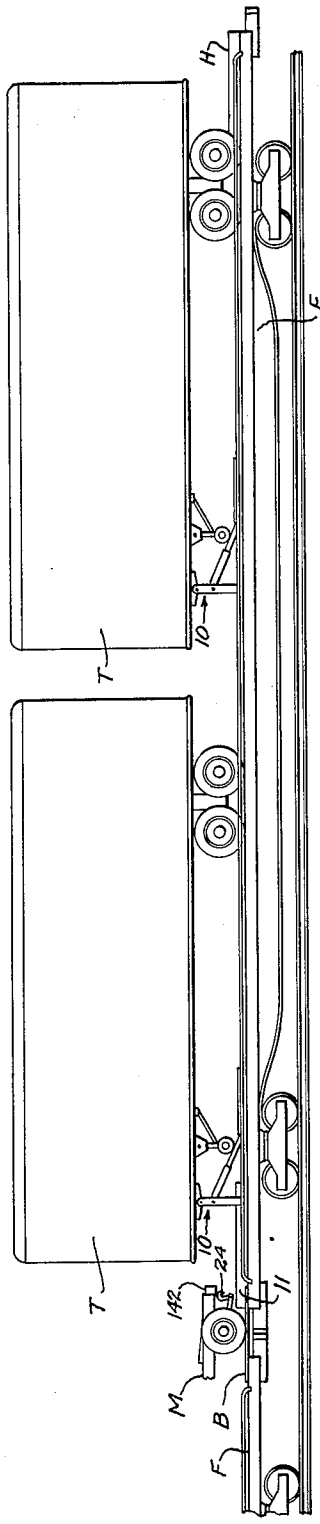

FIG. 1.

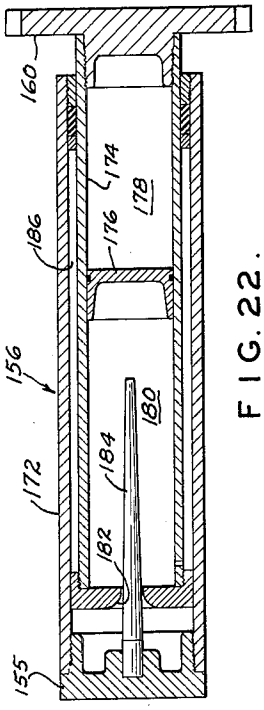

FIG. 22.

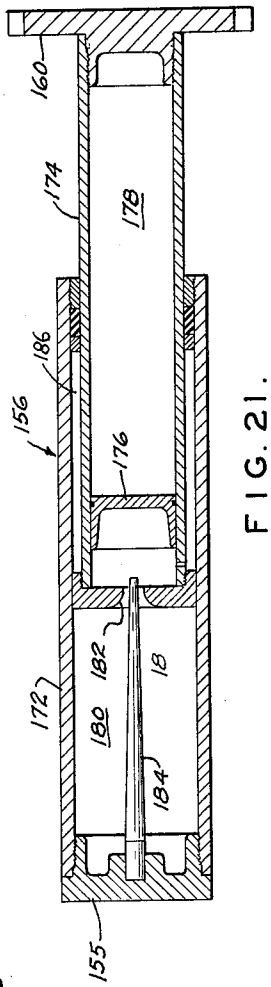

FIG. 21.

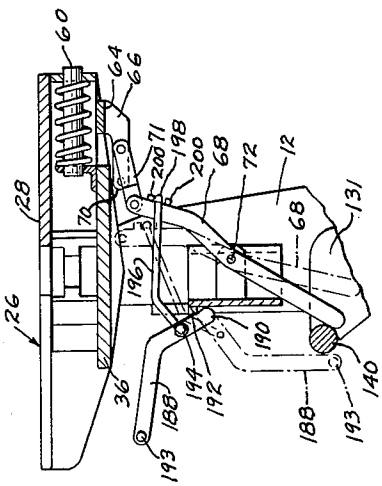

FIG. 23

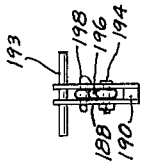

FIG. 24.

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COLLAPSIBLE SUPPORT

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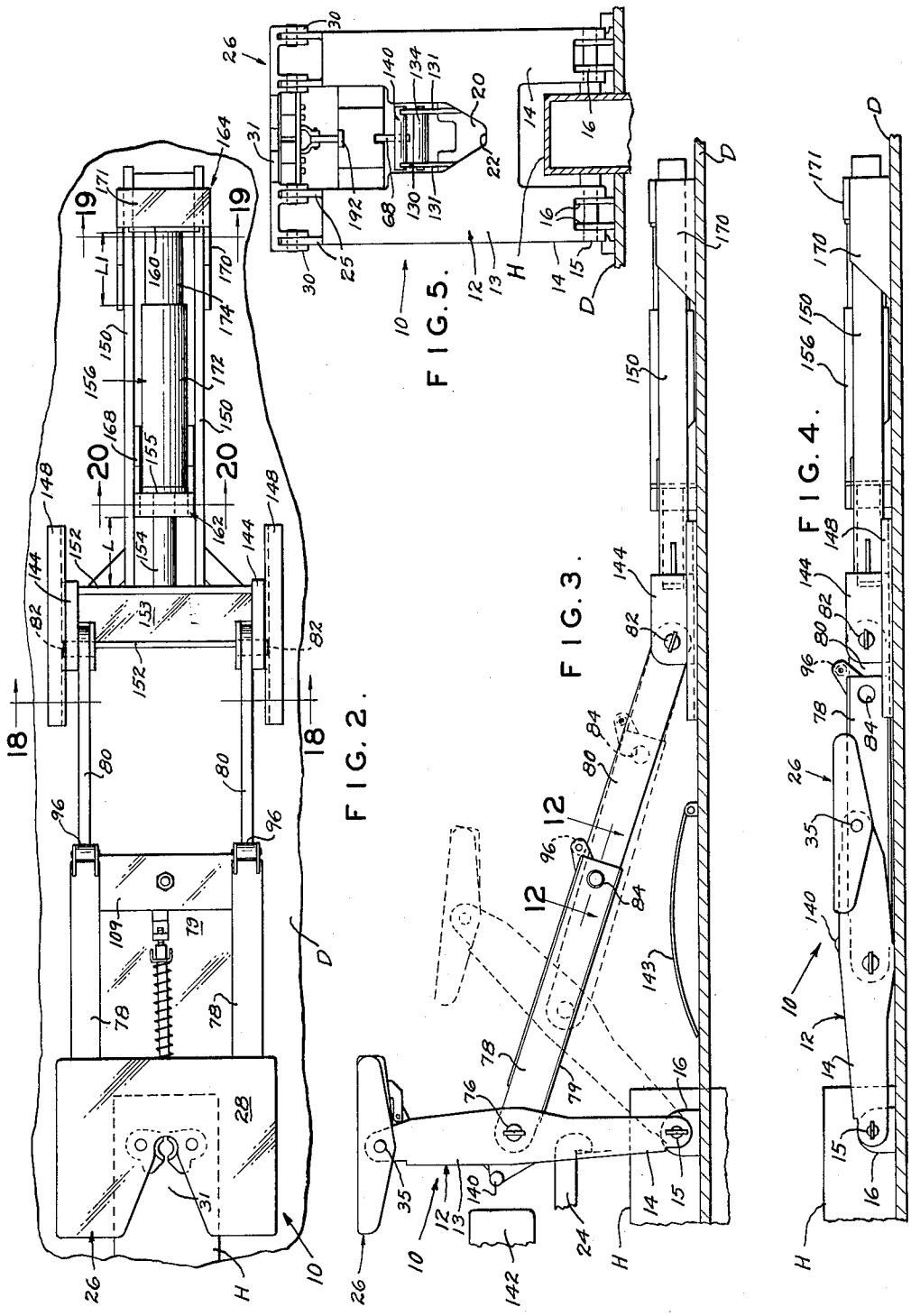

FIG. 2.

FIG. 3.

FIG. 4.

FIG. 5.

COLLAPSIBLE SUPPORT

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FIG. 6.

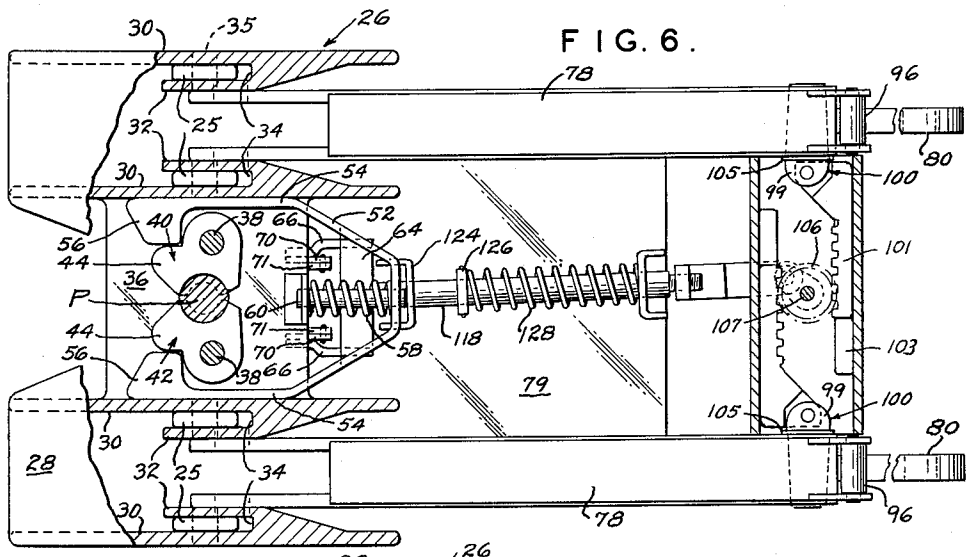


FIG. 8.

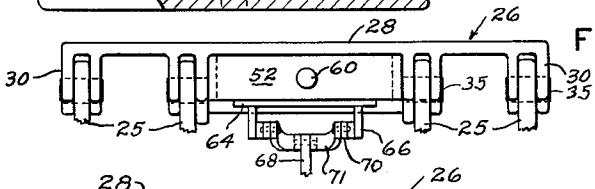


FIG. 7.

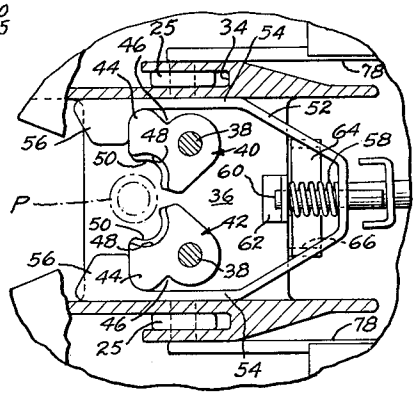
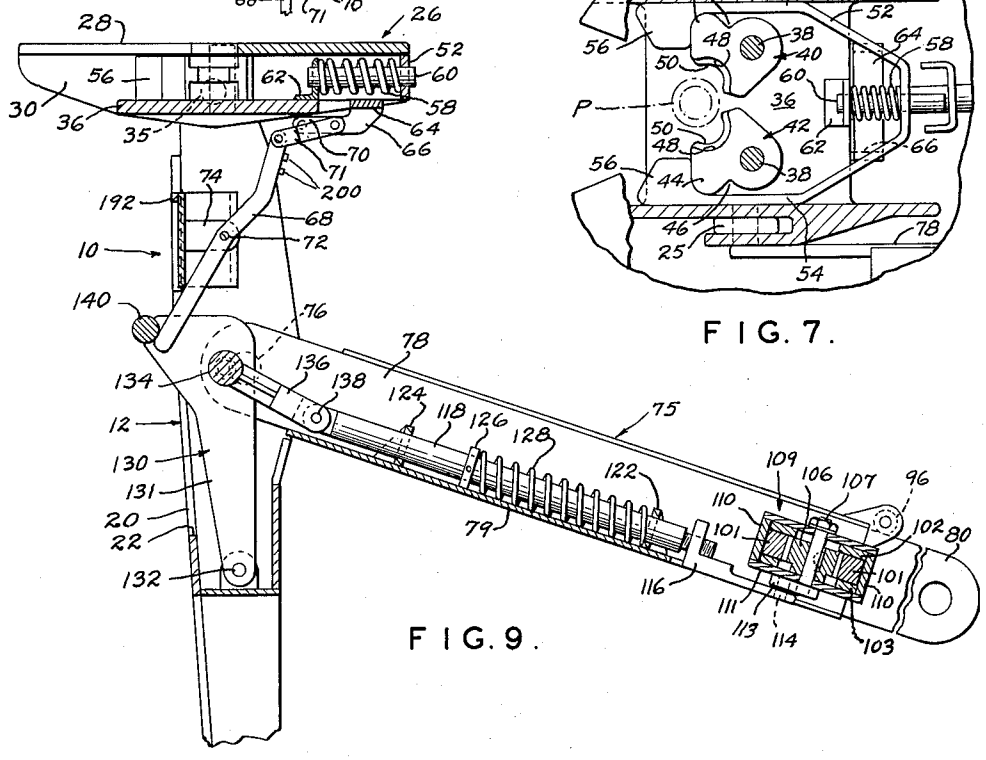


FIG. 9.



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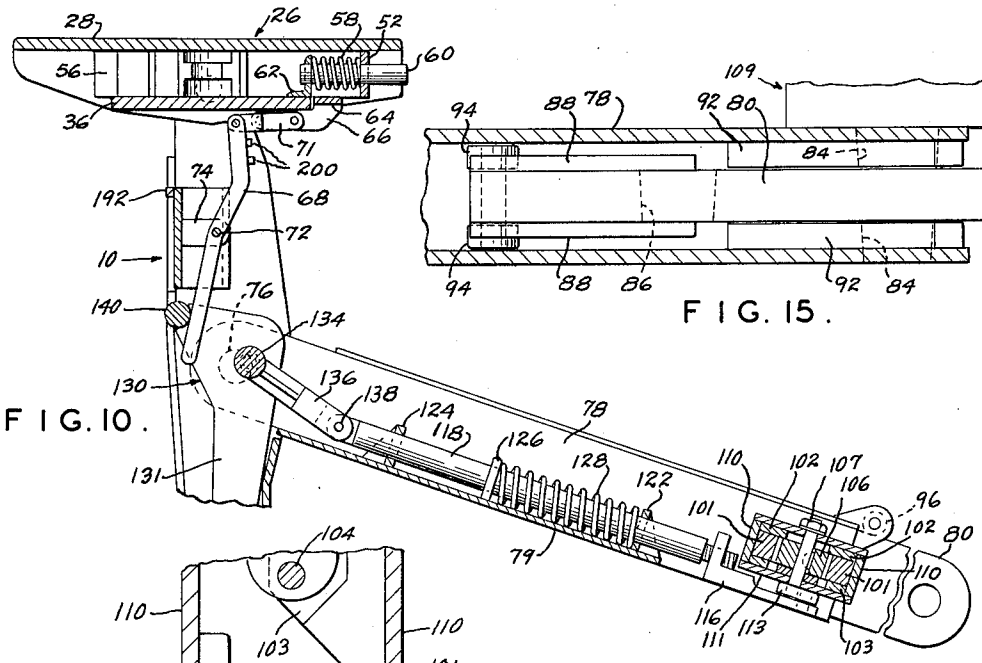

FIG. 10.

FIG. 15.

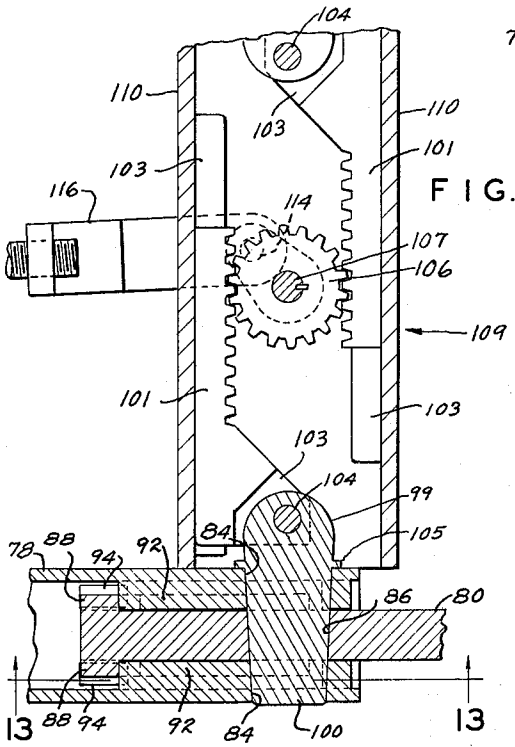

FIG. 12.

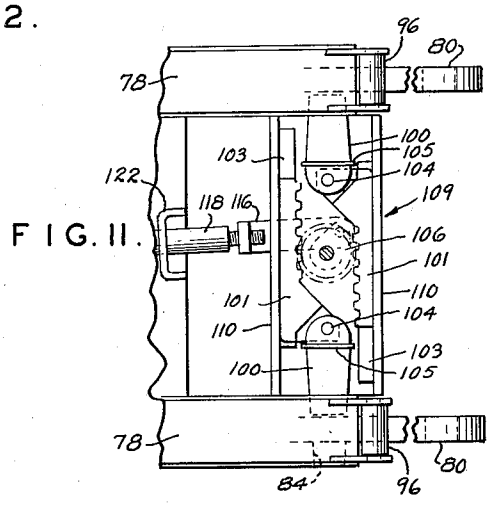

FIG. 11.

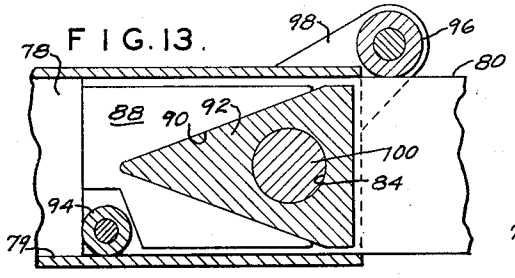

FIG. 13.

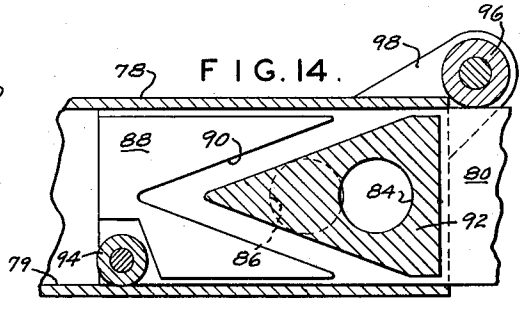

FIG. 14.

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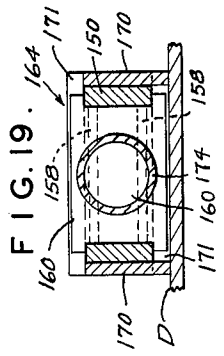

FIG. 19.

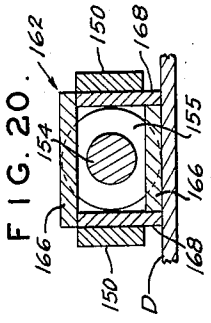

FIG. 20.

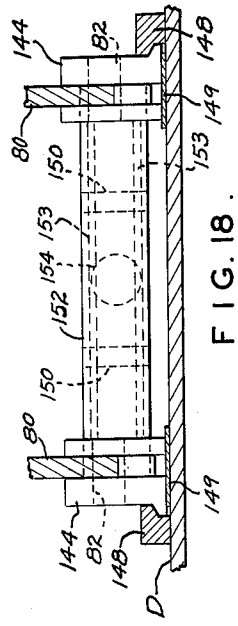

FIG. 18.

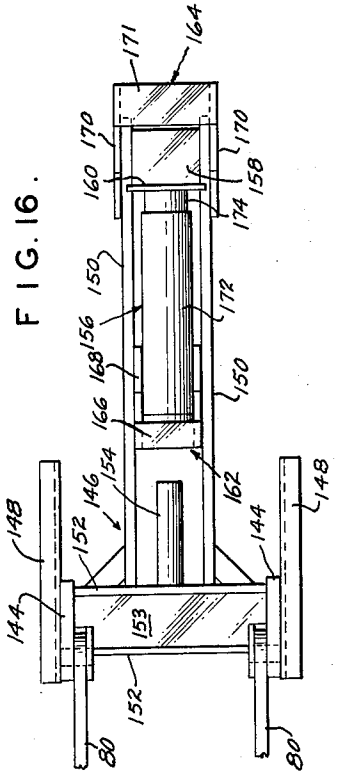

FIG. 16.

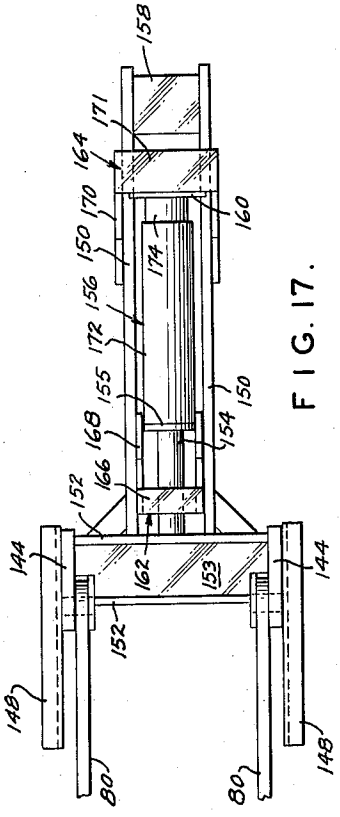

FIG. 17.

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COLLAPSIBLE SUPPORT

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Filed Nov. 18, 1963, Ser. No. 324,461
14 Claims. (Cl. 105—368)

This invention relates to a collapsible support for containers, highway trailers and the like, and particularly to a collapsible support or hitch having a supporting mounting plate or "fifth wheel" designed to engage a kingpin or the like of containers, such as highway trailers which are loaded upon railway cars for transport.

In the operation of a collapsible support or hitch that is erected by the upward pulling of a prime mover, such as a tractor, and is collapsed or knocked down by a pushing force applied against the hitch, means must be provided to releasably lock the hitch in erect position. It is necessary that such locking means positively lock the hitch in erect position and that the positive locking of the hitch be easily accomplished without any risk or danger to an operator. It is also desirable that the kingpin be unlocked from the supporting hitch separately without the hitch collapsing so that the trailer or container can be moved with the hitch still providing support.

Since a collapsible support or trailer hitch which is pulled up and knocked down by a tractor normally collapses in a rearward direction away from the tractor, the hitch should not contact or interfere with the supported trailer or container while it is being collapsed or erected. Some trailers carry dolly wheels or landing gear connected by an axle which in some instances is closely spaced from the hitch, and the hitch must clear the dolly wheel axle when moved between collapsed and erect positions. Some types of collapsible hitches employ a diagonal brace having a lower end which moves rearwardly upon collapsing of the hitch. The movement of the lower end of the brace has disadvantages and requires the hitch in some instances to be inset below the deck of the car in order to provide adequate clearance for the dolly wheel axle of the trailers. This, then, requires a special car flooring to receive the collapsing hitch. Furthermore, if the hitch is required to collapse into a recess, the mounting plate which supports the front end of the trailer must be limited by the size of recess. A large mounting plate is desirable to provide maximum lateral support to minimize rocking of the trailer during transport.

Normally, two hitches are mounted on a single railway car for supporting in transit two highway trailers. One hitch is mounted at one end of the car and the second hitch in the center of the car. Some railway flat cars for transporting highway trailers are designed with a minimum floor or deck height above the ground to provide a loaded flat car having a minimum height. This results in the two draft gear housings at the ends of the car projecting upwardly above the car deck. Since one of the draft gear housings will interfere with the hitch mounted at the end of the car the draft gear housings limit the space available for mounting the two hitches so that the full length of the car cannot be utilized.

It is therefore an object of the present invention to provide a novel collapsible hitch for trailers and the like which may be moved between lowered and raised positions by a prime mover, such as a tractor, thereby eliminating the necessity of a manual operator to raise and lower the hitch.

An additional object of the invention is the provision of a novel collapsible hitch or fifth wheel stand for a trailer and the like which may be mounted on the upper supporting surface of a railway car or the like and collapsed in a minimum of space without interfering with the trailer.

A further object of the invention is the provision of a collapsible type hitch which is effectively and accurately locked in a raised upright position when the hitch is moved from a collapsed position to the raised position at which locking is achieved without danger to an operator.

Another object of the invention is the provision of a collapsible hitch adapted to be raised and collapsed by a prime mover, such as a tractor, in which locking means for the kingpin of a trailer or the like may be unlocked manually to permit release of the kingpin without the collapsing of the hitch.

Another object is the provision of such a collapsible hitch which is particularly designed for a so-called low-level flat car in which the draft gear housings at the end of the car project from the deck of the car, such that the draft gear housings do not interfere with the positioning of the hitch on the car so that it is possible to utilize the full length of the car.

Briefly described, the invention comprises a collapsible type hitch adapted to engage the kingpin of a trailer or the like and having a support structure movable between a collapsed inoperative position permitting a trailer or tractor to straddle the hitch and a raised operative position permitting a trailer or the like to be supported thereon. The support structure when in raised position has a diagonal support member connected to a vertical support member on the side thereof adjacent the trailer with the diagonal member being movable between an extended position in the raised position and a retracted position in the collapsed position, and a fifth wheel plate structure carried by the vertical support member and including latch means adapted to cooperate with the kingpin of a trailer or the like to secure the front end of same, the lower ends of the vertical and diagonal members being spaced horizontally from each other along the deck of transporting means with the lower end of the diagonal member being held against relative horizontal movement when the hitch is moved between collapsed and raised positions thereby to maintain a generally uniform spacing of the lower ends of the vertical and diagonal members in both the collapsed and raised positions of the hitch. Other objects and features will be in part apparent and in part pointed out hereinafter.

The invention accordingly comprises the constructions hereinafter described, the scope of the invention being indicated in the following claims.

In the accompanying drawings, in which one of various possible embodiments of the invention is illustrated,

FIGURE 1 is an elevational view of a railway flat car carrying highway trailers and showing collapsible hitches of the present invention mounted on the railway car and engaging the kingpins of the trailers to secure the trailers on the railway cars, a tractor being shown for raising and lowering the collapsible hitches;

FIGURE 2 is a plan view of one of the novel hitches shown in FIGURE 1 in raised position;

FIGURE 3 is a side elevational view of the hitch shown in FIGURE 2 in raised position, the broken line indication illustrating a partially collapsed position;

FIGURE 4 is an elevational view of the hitch of FIGURES 2 and 3 illustrating the hitch in the collapsed position;

FIGURE 5 is a front elevational view of the hitch of FIGURES 2 and 3 illustrating the hitch in a raised position;

FIGURE 6 is an enlarged plan view of the mounting plate structure of the hitch with certain parts broken away and showing means to secure the kingpin of a trailer and to lock the hitch in raised position, the kingpin securing means being shown in locked position about a kingpin of a trailer;

FIGURE 7 is an enlarged plan view of the mounting

plate structure of FIGURE 6 with certain parts broken away and showing the kingpin securing means in unlocked position;

FIGURE 8 is a front elevational view of the linkage for actuating the kingpin securing means illustrated in FIGURES 6 and 7;

FIGURE 9 is a partial side elevational view of the hitch with certain parts broken away and illustrating the locked position of the kingpin securing means and the locked position of the hitch;

FIGURE 10 is a partial side elevational view similar to FIGURE 9 but showing the unlocked position of the diagonal member and the kingpin securing means immediately before collapsing of the hitch;

FIGURE 11 is a fragment of FIGURE 6 illustrating the locking pins for the diagonal member of the hitch in an unlocked position;

FIGURE 12 is a sectional view taken generally on line 12—12 of FIGURE 3 and showing means to align and lock movable portions of the diagonal support member;

FIGURE 13 is a sectional view taken generally along line 13—13 of FIGURE 12;

FIGURE 14 is a sectional view similar to FIGURE 13 but showing the portions of the diagonal support member out of aligned position;

FIGURE 15 is a plan view of the means to align the movable portions forming the diagonal support, certain parts being broken away;

FIGURE 16 is a plan view of the means for cushioning the hitch shown in FIGURE 2 and illustrating the position of the cushioning means after the hitch moves in a forward direction under forces exerted in one direction;

FIGURE 17 is a plan view similar to FIGURE 16 but illustrating the position of the cushioning means after the hitch moves in a rearward direction under forces exerted in an opposite direction from that of FIGURE 16;

FIGURE 18 is a sectional view taken generally along line 18—18 of FIGURE 2;

FIGURE 19 is a sectional view taken generally along line 19—19 of FIGURE 2;

FIGURE 20 is a sectional view taken generally along line 20—20 of FIGURE 2;

FIGURE 21 is a longitudinal sectional view of the fluid mechanism forming the cushioning means and illustrating the mechanism in extended position;

FIGURE 22 is a longitudinal sectional view of the fluid mechanism of FIGURE 21 showing the mechanism retracted under impact forces exerted against the railway car;

FIGURE 23 is an elevational view of the hitch with certain parts broken away and showing a manual operator for unlocking the securing means for the kingpin of a trailer to release the kingpin without collapsing the hitch; and

FIGURE 24 is an elevational view of the manual operator of FIGURE 23 removed from the hitch.

Corresponding reference characters indicate corresponding parts throughout the several views of the drawings.

Referring to the drawings, and particularly to FIGURE 1, two railway flat cars F are coupled to each other and their decks D are spanned by bridge plates B. A tractor M (partially indicated) may be supported on bridge plates B when moving from one flat car to another. Each flat car F is adapted to carry two highway trailers T. To secure trailers T on the flat car, a collapsible trailer hitch or support indicated generally at **10** is provided for each trailer T, one hitch being mounted adjacent one end of flat car F and the other hitch **10** being mounted intermediate the length of the car. Each trailer T has a kingpin P extending from its front end (see FIGURES 6 and 7), which is engaged and locked in position to hold the associated trailer in secured position. The flat cars F are of a so-called "low level" flat car in which the deck height is minimized and the draft gear housings, indicated at H in FIGURES 1 and 5, project above the adjacent floor or deck D of the flat car. By mounting the front hitches over the draft gear housing at one end of the flat car, the full length of the car is utilized to provide a minimum length car. While hitches **10** are illustrated in the drawings as mounted on railway cars, it is to be understood that the hitches may be mounted on other transporting means, such as, for example, barges, ships, airplanes and the like or in stationary installations.

Referring to FIGURES 2–5, hitch **10** is shown as mounted on the deck or floor D formed by a deck plate of the railway car. It is to be understood that hitch **10** may be mounted on a separate base support plate which, in turn, may be mounted on the flat surface of a deck plate, such as by welding, without any specific modification of the deck plate. A vertical support designated generally **12** has a body **13** formed of a casting with extending lower legs **14** pivotally connected at **15** to lugs **16** secured to plate D. Legs **14** straddle a draft gear housing H (FIGURE 5) which projects above the upper surface of deck D in the low-level flat car F. In the collapsed position of the hitch as shown in FIGURE 4, vertical support **12** clears the rear end of draft gear housing H.

The front face of body **13** is formed with a pocket **20** defining a bottom edge **22**. For raising hitch **10** from collapsed position shown in FIGURE 4, a hook **24** (FIGURES 1 and 3) on the rear end of tractor M may engage body **13** over edge **22** to pull the vertical member **12** upwardly and raise the hitch to erect position as shown in FIGURES 3 and 5. Hook **24** may be raised and lowered by suitable controls (not shown) in the cab of tractor M to engage edge **22**. When edge **22** is engaged by hook **24**, tractor M is driven forwardly away from trailer T to pull the hitch to raised position.

Mounted on fingers **25** (FIGURE 5) which project from the extending ends of vertical support **12** is a mounting plate or fifth wheel support structure indicated generally at **26** which may be formed of a casting. Defining the upper supporting surfaces of mounting plate structure **26** is a support plate **28** having a plurality of ribs on the underside thereof (FIGURE 6). A forwardly facing opening **31** (FIGURE 2) in plate **28** is adapted to receive and guide the kingpin P to secured position. Offset from each rib **30** is a lip **32** forming a slot **34** between the lip and its associated rib **30**. Projecting within each slot **34** is a finger **25** of support **12** pivotally connected at **35** between a rib **30** and its associated lip **32**. Since slots **34** are only slightly larger than fingers **25**, the pivoting of plate structure **26** in a clockwise direction as viewed in FIGURES 9 and 10 is limited by contact of fingers **25** with the surfaces defining the deep end portions of slots **34**.

Extending between inner ribs **30** is a lower plate **36**. A pair of pins **38** extend vertically between plates **28** and **36** (FIGURES 6 and 7). Mounted for free rotation on pins **38** are complementary facing locking jaws **40** and **42** adapted to engage and secure kingpin P of a trailer T. Each jaw **40**, **42** has a rounded knob **44** formed with a notch **46**. A kingpin seat **48** on each jaw has an arcuate projection or shoulder **50** adapted to engage a grooved portion in a conventional kingpin P.

To hold jaws **40**, **42** in closed position about a kingpin as shown in FIGURE 6 and in open position as shown in FIGURE 7, a yoke or slide **52** has a pair of arms **54** fitting respectively between and mounted for sliding movement along inner ribs **30**. A hook portion **56** on the end of each arm **54** is adapted to fit within a mating groove **46** of the respective adjacent jaw to lock the jaw in closed position as shown in FIGURE 6. A spring **58** is mounted around a rod **60** secured to a bracket **62** on lower plate **36**. Spring **58** is compressed between bracket **62** and yoke **52** to bias yoke **52** away from lower plate

36. In the open position of jaws 40, 42 as shown in FIGURE 7, hook portions 56 engage the outer surface of knobs 44 to hold the jaws in open position under the bias of spring 58. A bar 64 is secured to slide 52 and has a pair of fixed arms 66 extending therefrom. Pivoted at one end to each arm 66 is a link 70. Pivotally connected between links 70 and one end of a lever 68 are links 71 (see FIGURES 6, 8 and 9). Lever 68 is pivoted at 72 to lug 74 extending rearwardly from the back surface of body 13. The arranging of links 70, 71 between arms 66 and lever 68 permits free tilting of fifth wheel plate structure 26 about pivots 35 in a counterclockwise direction as viewed in FIGURES 9 and 10 to the collapsed position shown in FIGURE 4 without movement of yoke 52. Rotation of lever 68 in a counterclockwise direction as viewed in FIGURE 9 moves slide 52 against the bias of spring 58 from its position of FIGURE 6 to its position of FIGURE 7.

To brace vertical support 12 and to transmit impact forces and the like from kingpin P, a diagonal brace or support member generally designated 75 is provided. Diagonal support member 75 comprises a pair of upper box-shaped diagonal legs or arms 78 (FIGURES 2, 3, 9 and 10) connected by a bottom plate 79. Telescoping within each box-shaped leg 78 is a separate lower leg or arm 80 of a generally rectangular cross sectional area and each having its lower end pivoted at 82 as will be explained. Carried by each leg 80 is a roller 94 for riding along the adjacent bottom surface of the associated leg 78. Mounted on projections 98 which extend beyond the lower ends of legs 78 are rollers 96 which ride along the adjacent upper surface of legs 80 (FIGURES 13 and 14). Rollers 94 and 96 minimize the sliding friction between legs 78 and 80.

To hold legs 78 and 80 in proper aligned position when the hitch is raised, openings 84 are formed through the sides of each box-shaped upper leg 78 (FIGURE 12). The end of each lower leg 80 received within upper leg 78 has an opening 86 for alignment with openings 84 of the corresponding leg 78 when legs 78 and 80 are in extended position. Locking pins 100 through the aligned openings 84 and 86 lock legs 80 to the respective legs 78 and prevent the hitch from collapsing.

To align openings 84 and 86, the back end of each leg 78 has a pair of oppositely disposed V-shaped lugs 92 extending toward each other from the inner side walls of the legs, as shown in FIGURES 12–14. The end of each leg 80 received within a respective leg 78 has lug portions 88 extending laterally thereof and formed with V-shaped slots 90. Each V-shape slot 90 is shaped to conform with an aligned one of the lugs 92 extending from the side walls of legs 78.

While each lug 92 is shown in FIGURE 14 aligned with V-shaped slot 90, it is to be understood that lugs 92 will normally be tilted or canted slightly relative to slots 90 while the hitch is being raised. This is a result of sagging between rollers 94 and 96 from the dead weight of the legs 78 and 80 as the hitch is being moved to erect position. Once the pointed ends of lugs 92 contact the inclined surfaces defined by V-shaped slots 90, further movement of lugs 92 fully into the V-shaped slots 90 cam lugs 92 and slots 90 together resulting in a rigid alignment of the upper and lower legs 78 and 80, and an alignment of openings 84 and 86. Holding legs 78 and 80 in extended position are locking pins 100 fitting within the aligned openings 84 and 86 and each having an inwardly extending projection or lug 99. Lugs 92 and V-shaped slots 90 additionally function to resist the tendency of legs 78, 80 to pivot about pins 100.

Locking means are provided to move the locking pins 100 in and out of their locking positions, shown in FIGURE 12. The locking means include racks 101 having integrally connected spaced upper and lower extensions 102 and 103 respectively, which are pivotally connected at 104 to projections 99 on pins 100. A circumferential flange or lip 105 projects from each pin 100 and is adapted to fit against the inner surface of legs 78 to limit the inward movement of pins 100 when the diagonal member is locked. A pinion 106 on shaft 107 engages racks 101 and is retained in proper position by upper extensions 102 extending over the edge of pinion 106. A suitable housing for pinion 106 and racks 101 is designated generally 109 and extends between legs 78. Housing 109 has sides 110 connected by upper and lower plates 111. A lower hub portion of pinion 106 rests against lower plate 111 of housing 109.

A lever 113 is fixed to the lower end of shaft 107 (see FIGURES 10 and 12). Pivotally connected to lever 113 at 114 is link 116 secured to an actuating rod 118. Rod 118 is mounted for longitudinal movement within suitable openings of projections 122, 124 secured to bottom plate 79 extending between legs 78. The openings in projections 122, 124 have sufficient clearance to allow a slight lateral movement of rod 118 upon actuation of pinion 106. A spring stop 126 is secured to rod 118. Spring 128 is mounted between projection 122 and stop 126 to bias rod 118 and pinion 106 in a direction to urge locking pins 100 outwardly.

To move rod 118 against the bias of spring 128, a push lever 130 has legs 131 pivoted at 132 on vertical support 12. A cross member 134 between legs 131 has a connecting link 136 pivoted thereto at one end. The opposite end of link 136 is pivoted at 138 to rod 118. A horizontal push bar 140 extends between legs 131 and is positioned forwardly of vertical support 12. Lever 68 is biased against bar 140 by spring 58 and yoke 52. To move hitch 10 from raised position to collapsed position, a bumper block 142 on the rear of tractor M (FIGURES 1 and 3) is arranged at a height to engage push bar 140 upon rearward travel of the tractor. A leaf spring 143 may be placed beneath each diagonal leg 78 (FIGURE 3) to cushion the fall of the hitch when the hitch is knocked to collapsed position.

Operation is as follows:

Upon rearward movement of tractor M, pusher bar 140 and lever 130 are pushed inwardly upon contact with bumper block 142 to the position shown in FIGURE 10. Initial movement of lever 130 pivots lever 68 in a counterclockwise direction to move slide 52 and hook portions 56 from within notches 46. Also, actuating rod 118 is moved rearwardly by lever 130 to rotate pinion 106 and retract locking pins 100 from openings 86 of legs 80. Upon lever 130 reaching the position shown in FIGURE 10, hook portions 56 disengage jaws 40, 42, and locking pins 100 are removed from openings 86 of legs 80 substantially simultaneously with the disengagement of jaws 40, 42. Further rearward movement of tractor M causes bumper block 142 to engage and push vertical support 12 about pivots 15. Kingpin P swings jaws 40, 42 to open position upon movement of support plate 28 away from the kingpin. The ends of pins 100 ride against the adjacent surface of legs 80 upon collapsing of the hitch and keep lever 130 from returning to its original position forwardly of vertical support 12.

During the raising of the hitch from collapsed position by hook 24 of tractor M engaging edge 22, the mating of V-shaped lugs 92 with V-shaped slots 90 properly aligns openings 84 and 86, and tapered locking pins 100 move into openings 84 under the bias of spring 128 and pinion 106. This allows lever 130 to move outwardly, slide 52 and jaws 40, 42 remaining in the position shown in FIGURE 7. Once the hitch is erected the trailer may be lowered to engage plate 28 with the kingpin slightly forward of jaws 40, 42. Then, a rearward push of the trailer by the tractor moves kingpin P against jaws 40, 42 to move the jaws to closed position with spring 58 biasing slide 52 to the position of FIGURE 6. Contact of kingpin P against open jaws 40, 42 moves slide 52 slightly forward to permit jaws 40, 42 to ride over hook portions 56 and to pivot about the kingpin P. Then spring 58

biases slide 52 to the position shown in FIGURE 6 to positively lock jaws 40, 42 about kingpin P. Locking pins 100 are easily visible from a position remote from the hitch for determining when the hitch is positively locked in raised position without any danger to the operator of the hitch. The position of the slide is also easily visible to determine the secured position of the kingpin.

If desired to provide cushioning for impact forces exerted against the hitch, each leg 80 is pivotally connected at 82 to a rabbeted slide block 144 of a slide designated generally 146 (FIGURES 16–20). Rabbeted guide rails 148 are secured to deck D and slide blocks 144 move back and forth along guide rails 148 and wear plates 149 upon the application of impact forces and the movement of slide 146. Connecting a pair of sides 150 of slide 146 is a crossmember secured between slide blocks 144 and formed by sides 152 connected by top and bottom plates 153. A rod 154 is secured to a side 152 and is adapted to engage one end plate or cap 155 of a cushioning unit generally designated 156. Horizontal cross plates 158 of slide 146 (see FIGURE 19) extend between and are secured to sides 150 to engage an opposite end plate or cap 160 of cushioning unit 156.

Cushioning unit 156 in neutral position as shown in FIGURES 2 and 21 is fitted between end abutments or stops generally designated 162 and 164 fixed to floor D. End abutment or stop 162 (see FIGURE 20) has upper and lower plates 166 connected to side members 168. Plates 166 bear against end plate 155 to restrain the movement of cushioning unit 156 in one direction as shown in FIGURE 16. Side members 168 and lower plate 166 are secured, such as by welding, to floor D.

Forming end abutment or stop 164 (see FIGURE 19) are side members 170 connected by upper and lower plates 171. Lower plate 171 and side members 170 are suitably secured, such as by welding, to floor D. Upper and lower plates 171 bear against end 160 to restrain the movement of unit 156 in an opposite direction from abutment 162 as shown in FIGURE 17.

Referring to FIGURES 21 and 22, an embodiment of a cushioning unit or energy dissipating device 156 is illustrated and comprises an outer cylinder 172 receiving an inner hollow cylinder 174. Mounted in inner cylinder 174 is a float piston 176. A chamber 178 of a variable volume is formed within inner cylinder 174 and contains a relatively compressible fluid, such as air or dry nitrogen gas. A fluid chamber 180 of variable volume is formed within outer cylinder 172 and contains a relatively incompressible liquid, such as hydraulic fluid. A metering orifice 182 has a tapered metering pin 184 fitting therein. An annular space 186 between inner cylinder 174 and outer cylinder 172 is adapted to receive fluid from chamber 180 upon movement of cylinders 172 and 174. Upon impact forces being exerted through kingpin P and mounting plate structure 26 in either direction, fluid in chamber 180 is pressurized and piston 176 moves within chamber 178 with liquid flowing from chamber 180 into annular space 186 through a suitable valve while piston 176 compresses the air within chamber 178. After impact travel, the differential in pressure between chambers 178 and 180 effects movement of piston 176 toward chamber 180 to return the cylinders to their original neutral position with end 160 of cylinder 174 against abutment 164 and end 155 of cylinder 172 against abutment 162. Fluid within annular space 186 returns to chamber 180. For further details of the cushioning unit, reference is made to Patent No. 2,994,442, issued August 1, 1961 and entitled Kinetic Energy Absorbing Device, the entire disclosure of which is incorporated by this reference.

FIGURE 16 illustrates an impact force from a forward direction with legs 80 and mounting plate structure 26 pulled forwardly by kingpin P. Plates 158 engage end 160 and move inner cylinder 174 toward outer cylinder 172 which is stopped by abutment 162. The maximum amount of travel of slide 146 and cylinder 174 is indicated at L1 in FIGURE 2. FIGURE 17 illustrates an impact force from a rearward direction with legs 80 and mounting plate structure 26 pulled rearwardly by kingpin P. Rod 154 pushes against end 155 to move cylinder 172 toward cylinder 174. End 160 of cushioning unit 156 is restrained by bearing against plates 171 of abutment 164. The maximum travel of cylinder 172 and slide 146 is indicated at L in FIGURE 2 as side 152 will engage abutment 162 before outer cylinder 172 engages end 160.

While only one embodiment of a cushioning or energy dissipating unit has been illustrated, it is to be understood other types of cushioning may be utilized, such as, for example, a plurality of buffer plates. Further, in instances where impact forces are not normally encountered, such as in barges and ships, the shock absorbing or cushioning mechanism of the trailer hitch may be removed and diagonal legs 80 fixed to deck D. Also, if the impact forces are not transmitted to the hitch from the car, such as in cushioned sliding center sill railway cars, the cushioning for the hitch may be omitted.

Hitch 10 may be mounted on barges, ships and other transporting means. In some instances, trailers and the like may be loaded on barges and ships as well as railway cars by cranes which load and unload the trailers. In this event, it would not be desirable to move the hitch to a collapsed or lowered position and a tractor would not be employed to collapse the hitch. In order to unlock the kingpin P of a trailer without collapsing the hitch, a manual operator or unlocking assembly is illustrated in FIGURES 23 and 24, which is removable from the hitch. A lever 188 has an end 190 adapted to fit under a lug 192 on vertical support 12 (see also FIGURES 5 and 9). A handle 193 may be gripped by an operator for actuating lever 188. Pivoted at 194 to lever 188 is a bent rod 196 having a hook 198 on its extending end. Hook 198 is adapted to fit around lever 68 between lugs 200 which keep the hook from slipping or sliding along lever 68. If desired to unlock kingpin P to permit removal of trailer T while the hitch remains in erect position, end 190 of lever 188 is inserted beneath lug 192 and hook 198 is fitted around lever 68 as shown in solid lines in FIGURE 21. A downward leverage applied from handle 193 moves lever 68 and lever 188 to the broken line indication thereof of FIGURE 23. In this position, slide 52 has moved out of locking engagement with locking jaws 40 and 42 to permit kingpin P to be removed without collapsing the hitch. It is to be noted that when lever 188 and rod 196 are in the broken line position, rod 196 has pivoted past a dead center position and lever 68 is held in the broken line position by lever 188 without any force exerted by the operator. Thus, the operator is not required to remain under the trailer while it is unloaded or loaded. It is to be understood that the manual unlocking assembly may be fixed, if desired, to vertcial support 12.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results obtained.

As various changes could be made in the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above descripion or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. A fifth wheel stand adapted to engage a kingpin of a trailer or the like, said fifth wheel stand comprising a support structure movable between a collapsed inoperative position and a raised operative position, said support structure when in raised position having a generally vertical support member and a diagonal support member connected to the vertical member on the side thereof adjacent the trailer or the like, a fifth wheel plate structure carried by said vertical support member and includ-

ing latch means adapted to cooperate with the kingpin of a trailer or the like to secure same, said diagonal member being movable between an extended position in the raised position of the support structure and a retracted position in the collapsed position of the support structure, means movable between locked and unlocked positions for releasably locking the diagonal member in extended position and permitting movement of the diagonal member to retracted position only when unlocked, said vertical and diagonal members being mounted for pivotal movement adjacent their lower ends upon movement of the support structure between collapsed and raised positions, said vertical support member and said fifth wheel plate structure swinging in a rearward direction toward the trailer upon collapsing of the hitch from raised position, the lower pivoted ends of the vertical and diagonal members being spaced horizontally from each other and remaining at such spacing upon movement of the support structure between raised and collapsed positions said diagonal member comprising laterally spaced associated pairs of telescoping arms having openings in each pair of associated arms which are aligned when the arms are in extended position, said means for releasably locking the diagonal member comprising locking pins positioned within said aligned openings in the extended position of the arms, means to bias the locking pins into locking position within the aligned openings, and means to guide the associated telescoping arms into extended position with said openings being aligned whereby said locking pins are received within the aligned openings for locking the fifth wheel stand in raised position.

2. In a collapsible type hitch mounted on a base support and adapted to engage the kingpin of a trailer or the like, a first support member mounted for pivotal swinging movement on the base support between a generally vertical raised position and a generally horizontal collapsed position, a support plate structure carried by the extending end of said support member and including latch means to engage and secure the kingpin of a trailer or the like, a diagonal brace support member pivotally connected adjacent one end to said first support member and pivotally connected adjacent its opposite end to the base support, said diagonal brace member comprising a pair of telescoping arms movable between an extended raised position and a retracted collapsed position and having openings aligned with each other in the extended position thereof, complementary coacting guide means on said telescoping arms to position said arms accurately in the extended position for aligning said openings, a locking pin carried by said diagonal brace member and adapted to be inserted within the aligned openings for releasably locking the telescoping arms in extended position, means to bias the locking pin into locking position, and means for removing the locking pin from the aligned openings to permit movement of said first support member and said supporting plate structure to collapsed position.

3. In a collapsible type hitch as set forth in claim 2, cushioning means interposed between the lower pivoted end of the diagonal brace member and the base support to permit cushioned movement of the lower end of the diagonal member in a generally horizontal direction thereby to provide a cushioning action along the plane of the support plate structure.

4. In a collapsible type hitch mounted on a base support and adapted to engage the kingpin of a trailer or the like as set forth in claim 2, said coacting guide means on said telescoping arms comprising a V-shaped slot on one of the arms and a V-shaped lug on the other of said arms fitting within and guided by the V-shaped slot.

5. In a collapsible type hitch as set forth in claim 2, said means for removing the locking pin comprising a rack operatively connected to said locking pin, a pinion engaging the rack to move the rack back and forth, and a pinion actuating member operatively connected to the pinion to rotate the pinion and move the rack thereby to pull the locking pin from the aligned openings and permit collapsing of the hitch.

6. In a collapsible type hitch mounted on a base support and adapted to engage the kingpin of a trailer or the like as set forth in claim 5, said pinion actuating member projecting from the side of said vertical support member opposite the diagonal member and adapted to be positioned in the line of travel of a tractor whereby upon contact of the tractor with the actuating member said pinion is rotated to unlock the telescoping arms.

7. In a fifth wheel stand adapted to engage a kingpin of a trailer or the like, a support structure movable between a collapsed inoperative position and a raised operative position, said support structure when in raised position having a generally vertical support member and a diagonal support member connected to the vertical member on the side thereof adjacent the trailer or the like, a fifth wheel plate structure secured to said vertical support member and having an opening therein adapted to receive the kingpin, latch means carried by said fifth wheel plate structure adapted to engage the kingpin for securing same when the support structure is in raised position, said diagonal member having upper and lower telescoping arms movable between an extended position in the raised position of the support structure and a retracted position in the collapsed position of the support structure, complementary coacting guides on said telescoping arms to position the arms accurately in the raised position of the support structure, means carried by one of the arms for releasably locking the telescoping arms in the raised position of the support structure when the arms are accurately positioned by said coacting guides, and actuating means projecting from the side of said vertical support member opposite the diagonal member and operatively connected to both said locking means for the diagonal member and the latch means for said kingpin, said actuating means upon inner movement thereof effecting disengagement of the kingpin and unlocking of the diagonal member whereby the fifth wheel stand may be moved to collapsed position.

8. In a fifth wheel stand adapted to engage a kingpin of a trailer or the like, a support structure movable between a collapsed inoperative position and a raised operative position, said support structure when in raised position having a generally vertical support member and a diagonal support member connected to the vertical member on the side thereof adjacent the trailer or the like, a fifth wheel plate structure secured by said vertical support member, said fifth wheel plate structure including a supporting plate having a forwardly facing opening therein adapted to receive the kingpin, a pair of oppositely facing jaws adjacent the opening and pivoted for movement about vertical axes between open and closed positions with respect to the kingpin, a locking member mounted for sliding movement to a locked position engaging the outer sides of the jaws and holding their front ends in closed position about the kingpin of a trailer, said locking member comprising a yoke having a pair of spaced yoke arms, one of said arms extending alongside the outer side of one jaw and the other arm extending alongside the outer side of the other jaw, each of said arms having a portion adjacent its extending end projecting inwardly to engage and lock the adjacent jaw in closed position about the kingpin of a trailer or the like, means to bias the yoke to locked position with said jaws, a linkage operatively connected to the locking member and adapted to move the locking member in a forward direction for unlocking the kingpin, and actuating means projecting from the side of the vertical support member opposite the diagonal member and operatively connected to the linkage whereby upon movement of the actuating means in a rearward direction the linkage is actuated to move the locking member to unlocked posi-

tion thereby to permit the kingpin of a trailer to be removed from the jaws.

9. In a collapsible type hitch as set forth in claim 8, said linkage including a lever mounted for pivotal movement about a generally horizontal axis and a second manually actuated lever operatively connected to said first mentioned lever independently of said actuating means and adapted to move said first mentioned lever and said locking member when actuated without effecting any movement of said actuating means whereby the locking member is moved to unlocked position independently of said actuating means.

10. In a collapsible type hitch adapted to engage the kingpin of a trailer or the like carried on the deck of transporting means, a support structure movable between a collapsed inoperative position and a raised operative position, said support structure when in raised position having a generally vertical support member and a diagonal support member connected to the vertical member on the side thereof adjacent the trailer or the like, a fifth wheel plate structure carried by said vertical support member and including latch means adapted to cooperate with the kingpin of a trailer or the like to secure the front end of same for transmit on the transporting means, said diagonal member having upper and lower telescoping arms movable between an extended position in the raised position of the support structure and a retracted position in the collapsed position of the support structure, means movable between locked and unlocked positions for releasably locking the telescoping arms in extended position and permitting movement of the diagonal member to a telescoped retracted position only when the arms are unlocked, said vertical support member and said fifth wheel plate structure swinging in a rearward direction toward the trailer upon unlocking of the arms and collapsing of the hitch from raised position, means for positioning the arms accurately in the raised position of the hitch, said locking means being carried by one of the arms and automatically locking the arms together in the raised position when the arms are positioned accurately, and actuating means projecting from the side of the support member opposite the diagonal member and operatively connected to both said locking means for the diagonal member and the latch means for said kingpin, said actuating means being positioned in the path of travel of a tractor and moving inwardly upon contact of the tractor therewith to effect disengagement of the kingpin and unlocking of the diagonal member whereby the hitch may be moved to collapsed position.

11. In a fifth wheel stand adapted to engage a kingpin of a trailer or the like, a support structure movable between a collapsed inoperative position and a raised operative position, said support structure when in raised posiiton having a generally vertical support member and a diagonal support member connected to the vertical member on the side thereof adjacent the trailer, a fifth wheel plate structure secured to said vertical support member, said fifth wheel plate structure including a supporting plate having a forwardly facing opening therein adapted to receive the kingpin, a pair of oppositely facing jaws adjacent the opening and pivoted for swinging movement about vertical axes between open and closed positions with respect to the kingpin, a locking member mounted for sliding movement to a locked position engaging the jaws to hold their front ends in closed locked position about the kingpin of a trailer, a lever mounted on the vertical support member for movement about a generally horizontal axis and operatively connected to the locking member for moving the locking member to release the jaws and unlock the kingpin, actuating means projecting from the front side of the vertical support member opposite the diagonal member and operatively connected to the lever, said actuating means being positioned in the path of travel of a tractor for unloading the trailer whereby upon contact of the tractor with the actuating means the locking member is moved to disengage the kingpin, and second manually actuated means operatively connected to said lever independently of said first actuating means and projecting from the front side of said vertical support member, said second manually actuating means adapted to move said lever and said locking member when actuated without effecting any movement of said first actuating means whereby the locking member moves to unlocked position for releasing the kingpin independently of said first actuating means.

12. In a fifth wheel stand adapted to engage a kingpin of a trailer or the like, a support structure movable between a collapsed inoperative position and a raised operative position, said support structure when in raised position having a generally vertical support member and a diagonal support member connected to the vertical member on the side thereof adjacent the trailer, a fifth wheel plate structure secured to said vertical support member and having an opening therein adapted to receive the kingpin, latch means carried by said fifth wheel plate structure adapted to releasably lock the kingpin when the support structure is in raised position, said diagonal member being movable between an extended position in the raised position of the support structure and a retracted position in the collapsed position of the support structure, means for releasably locking the diagonal member in extended raised position, a lever mounted on the vertical support member about a horizontal axis and operatively connected to the latch means for unlocking the kingpin when pivoted in one direction, an actuating means projecting from the front side of the vertical support member opposite the diagonal member and operatively connected to both said locking means for the diagonal member and the lever for unlocking said kingpin, said actuating means being positioned in the path of travel of a tractor for unloading the trailer whereby upon contact of the tractor with an actuating means the lever is actuated to effect disengagement of the kingpin and the diagonal member is unlocked to collapse the fifth wheel stand, and second manually actuated means operatively connected to said lever independently of said first mentioned actuating means and projecting from the front side of said vertical support member, said second manually actuating means adapted when actuated to pivot said lever and actuate said kingpin latch means for unlocking the kingpin independently of the diagonal member and without effecting any movement of said first actuating means whereby the kingpin is unlocked independently of the diagonal member.

13. A railway flat car having a relatively low deck and a draft gear housing projecting above the deck at one end of the car, a hitch on the flat car for securing the kingpin of a trailer or the like transported by the car, said hitch being movable between a collapsed inoperative position on the deck adjacent the inner end of the draft gear housing and a raised operative position over the draft gear housing, said hitch when in raised position having a generally vertical support member straddling the draft gear housing and a diagonal support member connected to the vertical member on the side thereof adjacent the trailer, said vertical support being bifurcated adjacent its lower end for straddling the draft gear housing and being pivotally connected adjacent each side of the projecting draft gear housing, a fifth wheel plate structure secured to said vertical support member and having an opening therein adapted to receive the kingpin, latch means carried by said fifth wheel plate structure adapted to engage the kingpin for securing same when the support structure is in raised position, said diagonal member comprising a pair of relatively movable portions movable lengthwise between an extended position in the raised position of the hitch and a retracted position in the collapsed position of the hitch, means carried by one of the relatively movable portions for positioning said portions accurately in the extended position of the diagonal mem-

ber, means carried by one of the relatively movable portions for automatically locking the diagonal member in extended position when the portions are positioned accurately, and actuating means projecting from the side of the support member opposite the diagonal member and operatively connected to both said locking means for the diagonal member and the latch means for said kingpin, said actuating means being positioned in the path of travel of a tractor and moving inwardly upon contact of the tractor therewith to effect disengagement of the kingpin and unlocking of the diagonal member whereby the hitch may be moved to collapsed position.

14. In a fifth wheel stand as set forth in claim **12** wherein said second manually actuating means includes a second lever and a hook member pivotally connected to the second lever, said hook member adapted to engage said first mentioned lever for effecting unlocking of the

kingpin and moving past a dead center position with respect to said second lever when the kingpin is unlocked thereby to hold said first mentioned lever in retained position until manually released.

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