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GUIDE RAIL STRUCTURE FOR RAILWAY FLAT CARS

Filed Oct. 31, 1966

4 Sheets-Sheet 1

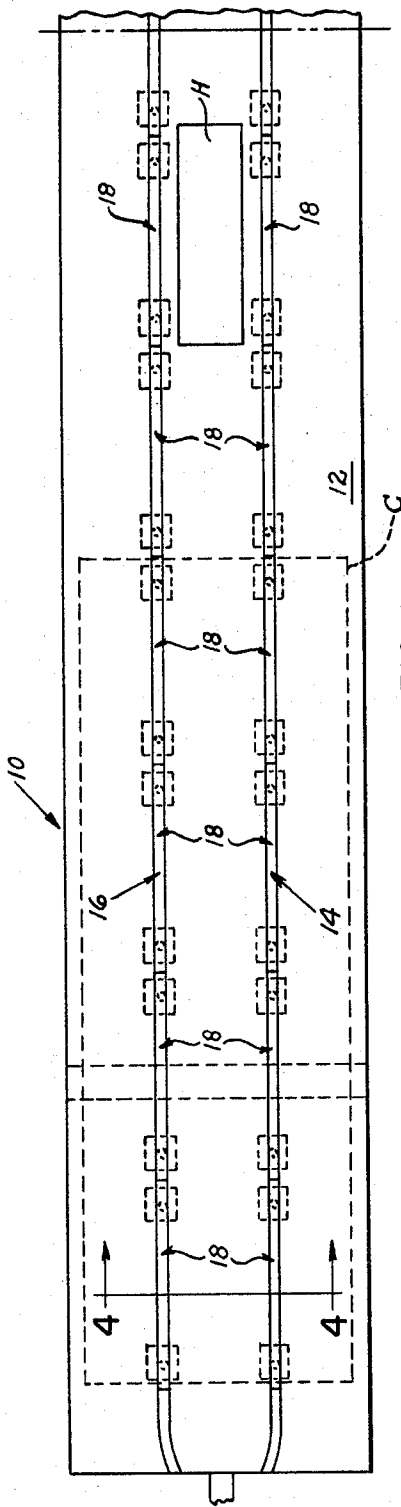


FIG. 1.

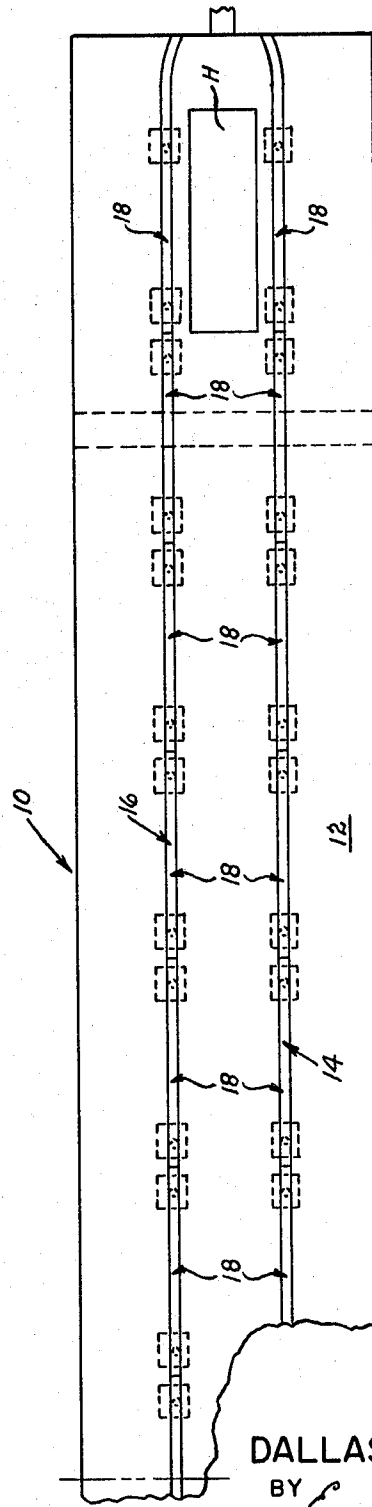


FIG. 1A.

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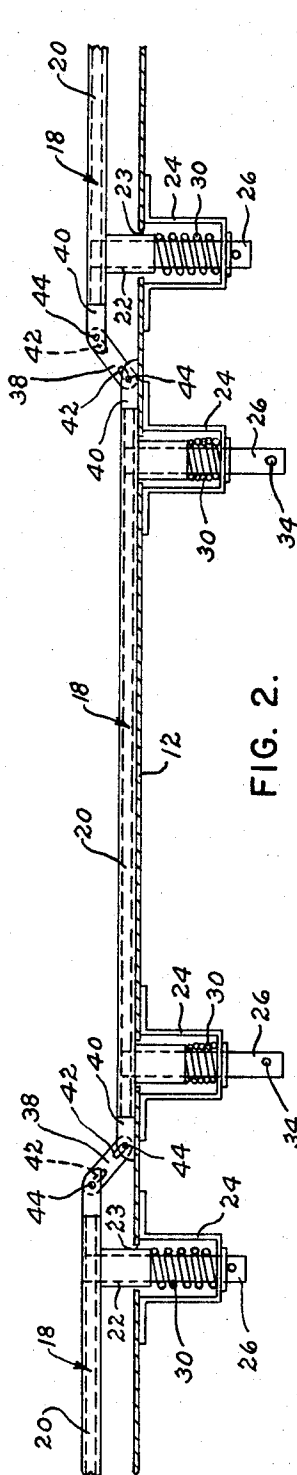


FIG. 2.

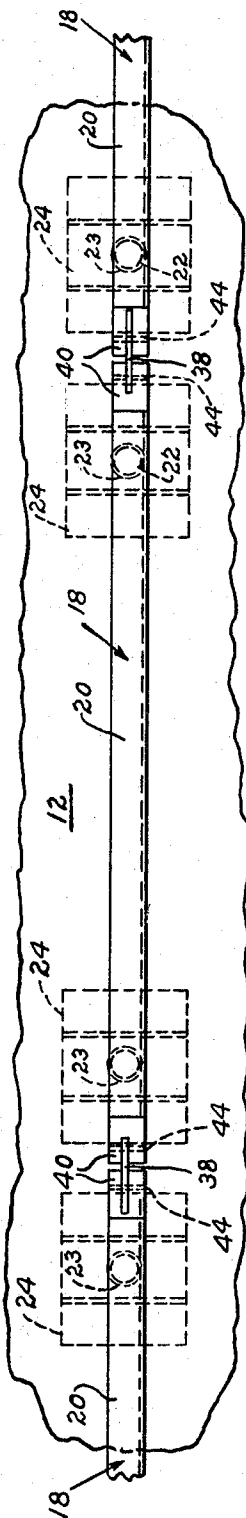


FIG. 3.

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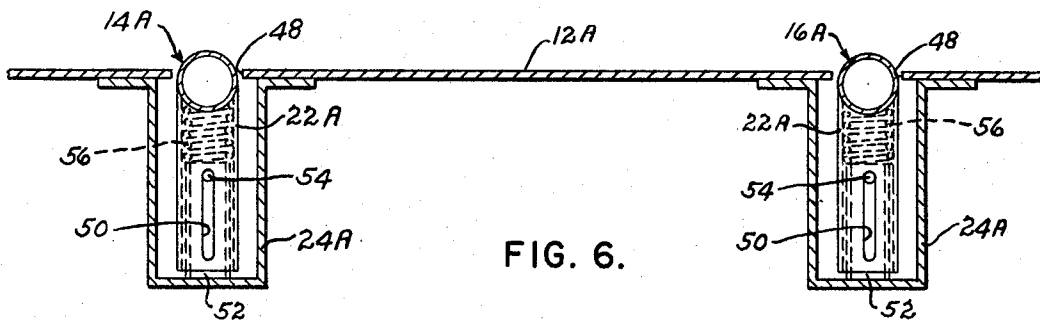
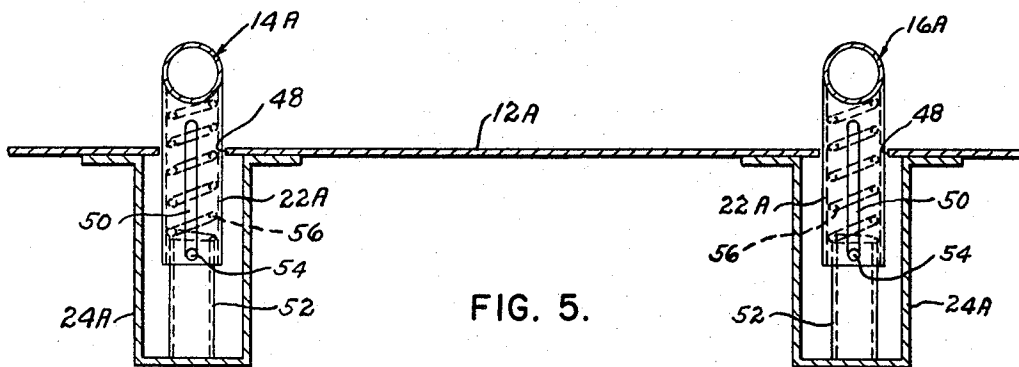
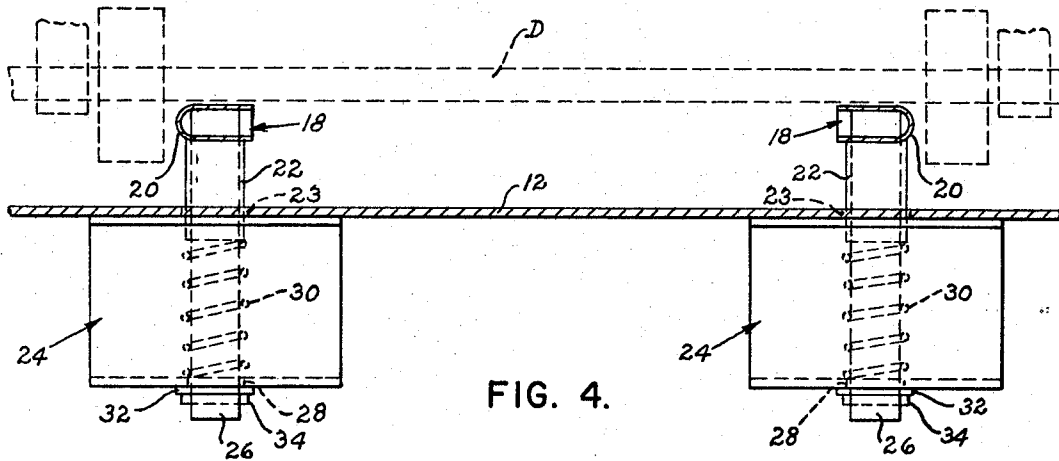
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3,381,630 GUIDE RAIL STRUCTURE FOR RAILWAY FLAT CARS

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7 Claims. (Cl. 105—368)

This invention relates to a guide rail structure for railway flat cars and more particularly to a guide rail structure having a pair of spaced, generally parallel guide rails adapted to guide wheeled roadway vehicles, such as tractors or trailers, for movement along the flat car.

Guide rails are employed on railway flat cars used in piggyback service to guide the roadway wheels of trailers and tractors upon movement of the trailer and tractors along the flat car. Heretofore, side sills projecting above the deck of a railway flat car have formed guiding surfaces for roadway vehicle wheels. Today, especially in flat cars adapted for carrying both containers and trailers, so-called flush deck cars are being employed in which the side sills do not project substantially above the deck surface of the railway flat car. By the use of such flush deck cars, laterally movable arms on cranes or the like may be easily positioned beneath containers for loading and unloading purposes. Thus, it is necessary to have separate guide rails in such flush deck cars for guiding the roadway vehicle wheels.

In the event trailers are employed having a dolly wheel axle extending between the dolly wheels, the dolly wheel axle may contact the adjacent guide rails if the dolly wheels are not raised a sufficient height. Thus, if fixed guide rails are employed as heretofore, the dolly wheels must be raised or else the dolly wheel structure may be damaged.

The present invention relates to a guide rail structure for a railway flat car having a pair of separate guide rails extending along the deck of the car with at least one section or portion of each guide rail being movable downwardly from an erect position to a retracted position upon contact with a downward force. The arrangement of a movable guide rail structure in such manner allows movement or deflection of the guide rails when contacted by a dolly wheel axle or the like.

It is an object of the present invention to provide a guide rail structure for a flush deck railway flat car having a pair of separate, spaced guide rails adapted to guide roadway vehicle wheels, such as tractor and trailer wheels, as the vehicles are moved along the deck of the railway car.

A further object of this invention is the provision of such a guide rail structure having at least one section of its length movable between an erect position and a retracted position upon a downward force being exerted against the guide rail structure thereby not to interfere with dolly wheel axles or the like.

Briefly defined, the present invention comprises a guide rail structure having a pair of spaced, generally parallel guide rails extending the length of the railway car and adapted to engage adjacent surfaces of the roadway tires of trailers and tractors to aid in guiding the trailers and tractors along the deck. The guide rails are spaced from each other a width sufficient to accommodate a hitch for securing the kingpin of a trailer. At least one section of each rail adjacent the hitch is mounted for movement between an erect position and a retracted position with resilient means to bias the movable rail sections to an erect position. Upon a downward force or load being exerted against the movable sections, such as from a dolly wheel axle or a container, the sections move to a retracted position against the resilient means. Upon re-

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moval of the downward force or load, the movable sections return to erect position under the influence of the biasing means.

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 several of various possible embodiments of the invention are illustrated,

FIGURES 1 and 1A are top plans of a railway flat car illustrating one embodiment of the guide rail structure comprising the present invention in which a plurality of depressible guide rail sections form each rail, FIGURE 1 illustrating substantially one-half the length of the railway car and FIGURE 1A illustrating the remainder of the railway car.

FIGURE 2 is an enlarged side elevation of one depressible rail section illustrating the connections to adjacent rail sections;

FIGURE 3 is an enlarged plan showing the rail section of FIGURE 2 with one section shown in a retracted or depressed position;

FIGURE 4 is a section taken generally along line 4—4 of FIGURE 1 and illustrating two depressible rails forming the guide rail structure with a dolly wheel axle closely adjacent the guide rails;

FIGURE 5 is a section of a modification in which the deck has cutout portions to receive the depressible rail sections;

FIGURE 6 is a section similar to FIGURE 5 but illustrating the rail sections of FIGURE 5 in a retracted or depressed position;

FIGURE 7 is a top plan of a railway flat car illustrating another embodiment of the guide rail structure of the present invention in which the sections of the guide rail structure immediately adjacent the hitches are movable from erect position to retracted position;

FIGURE 8 is a section taken generally along line 8—8 of FIGURE 7 and showing the fixed guide rail sections;

FIGURE 9 is a section taken generally along line 9—9 of FIGURE 7 and showing the movable guide rail sections; and

FIGURE 10 is a side elevation of one movable rail section illustrated in FIGURE 9 and looking generally along line 10—10 of FIGURE 9.

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

Referring now to the drawings for a better understanding of the invention and more particularly to FIGURES 1—4 in which one embodiment of the present invention is illustrated, a railway flat car is indicated generally 10 and is of the piggyback type adapted to carry trailers or the like thereon. Railway flat car 10 comprises a deck 12 having a pair of hitches H illustrated in a collapsed position and adapted to engage the kingpin of a trailer for securing the trailer in transit. Deck 12 is of a so-called flush type with the outer side sills being positioned at a position below the deck surface. Thus, the roadway wheels of a tractor or trailer are guided by the guide rail structure comprising the present invention.

The guide rail structure comprises a pair of rails indicated generally 14 and 16 positioned outwardly of hitches H. Guide rails 14 and 16 are generally identical and each comprise a plurality of rail sections 18 connected to each other. Section 18 includes an upper U-shaped rub rail 20 which is adapted to bear against the adjacent surface of roadway tires and the like of trailers and tractors. Sleeves 22 are secured to rub rail 20 at spaced intervals and are mounted within openings 23 cut out of deck 12. A generally hat-shaped lower housing 24 is secured, such as by welding, to the undersurface of deck

12 and receives an associated sleeve 22 upon downward movement of rub rail 20. Sleeve 22 receives a plunger or rod 26 secured to rub rail 20. Rod 26 extends downwardly through an opening 28 in housing 24 and a spring 30 is mounted about rod 26 between sleeve 22 and the adjacent lower web of housing 24. A washer 32 is mounted adjacent the outer surface of housing 24 about rod 26 and is held thereon by a pin 34 to restrain upward movement of rod 26 under bias of spring 30. Thus, upon a downward force being exerted on the upper surface of rub rail 20, sleeve 22 and rod 26 will move downwardly to compress spring 30 within housing 24 as shown in FIGURE 2. Upon release of the weight or load from rub rail 20, section 18 will return to its upward position as shown in FIGURE 2 under the influence of springs 30.

Each rail section 18 is mounted for independent movement relative to adjacent sections 18. As shown in FIGURES 2 and 3 particularly, a link 38 fits within a bifurcated end 40 on the extending end of each rail section 18. Link 38 has elongate slots 42 therein which receive pins 44 extending through the bifurcated ends 40. Thus, as shown in FIGURE 2, one rail section 18 may move downwardly relative to adjacent rail sections 18 with lost motion permitted by the elongate slots 42 in links 38.

Rail sections 18 may be arranged in any convenient length such as, for example, six (6) feet in length. In some instances, it may be desirable to mount a container C as shown in FIGURE 1 on railway flat car 10. Railway containers, such as 24 or 30 feet in length, may be positioned on four or five rail sections 18 to depress these sections while the adjacent rail sections are in erect position and form abutments to restrain longitudinal movement of the container C. Additional securing means may be provided for holding the containers in place against vertical and lateral movements, if desired.

As shown in FIGURE 4, a dolly wheel axle D is indicated in broken lines directly adjacent movable rail sections 18. Upon contact of dolly wheel axle D with rub rails 20, the associated rail sections 18 will be depressed. While sections 18 have been indicated as being positioned to contact and guide the inner surfaces of roadway tires and the like, it is to be understood that rail sections 18 may be positioned outwardly of the roadway tires, if desired.

Referring now to FIGURES 5 and 6, another embodiment of the guide rail structure comprising the present invention is illustrated in which only a rail section is mounted for movement to a position flush with deck 12A. Deck 12A has cutout portions 48 extending the length of guide rails indicated generally 14A and 16A. Each rail section 14A, 16A has integral sleeves 22A with longitudinal slots 50 therein. A rod 52 is secured to housing 24A and an associated sleeve 22A telescopes rod 52. A pin 54 on rod 52 is received within each slot 50 and restrains movement of sleeve 22A. A coil spring 56 is received within each sleeve 22A and continuously urges the associated rail section 14A, 16A upwardly to the position of FIGURE 5. FIGURE 6 illustrates the depressed position of rail sections 14A, 16A with rail sections being received within openings 48 of deck 12A.

Referring now to FIGURES 7-10, a further embodiment of this invention is illustrated in which movable sections 18B are shown only adjacent the rear end of the hitches H so as to accommodate dolly wheel axles of highway trailers which are secured by hitches H. The remaining sections 58 of guide rails indicated generally 14B and 16B are fixed to deck 12B of the railway car. Referring particularly to FIGURES 9 and 10, movable section 18B is illustrated and comprises a generally L-shaped main body or leaf 60 having an upper head 62 and lower sleeves or hinge portions 64 spaced at intervals along the lower marginal portion of main body 60. Secured to deck 12B are interfitting hinge or sleeve portions 66 fitting between adjacent hinge portions 64. A

hinge pin 68 connects hinge portions 64, 66 to mount main body 60 for pivotal movement between an erect position shown in FIGURE 10 and a retracted position shown in broken lines in FIGURE 9. In erect position as shown in FIGURES 9 and 10, main body 60 is inclined an angle A with respect to a vertical plane of around fifteen (15) degrees whereby a downward force on head 62 urges main body 60 to the retracted position illustrated in broken lines in FIGURE 9.

To urge main leaf 60 to erect position, torsion springs 70 are mounted about hinge pin 68 at intervals along the length of leaf 60 to continuously urge leaf 60 to the position of FIGURES 9 and 10. An angle shaped abutment 72 is secured to floor 12B and restrains upward movement of sections 18B. Thus, upon engagement by a dolly wheel axle, movable rail 18B will move to the broken line position of FIGURE 9 under the weight or force of the dolly wheel axle. The influence of torsion springs 70 will return rail sections 18B to erect position upon removal of the force or load thereon.

From the foregoing, it is to be understood that a guide rail structure has been provided for flush deck railway flat cars in which movable rail sections are mounted for movement between an erect position for guiding the tires of vehicles and a retracted position for minimizing obstruction to the deck surface. The movable rail sections are moved to a retracted position upon a weight or force exerted downwardly thereon and means are provided to return the movable sections to their original erect position after the weight or force has been removed. The movable sections may be of any desired length and may comprise the entire length of the guide rail structure or selective portions thereof.

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 description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. A railway flat car adapted to transport a trailer secured thereon comprising, a generally flat deck, a hitch mounted on the deck adapted to engage and secure the kingpin of the trailer, a pair of spaced, generally parallel guide rails on the deck extending longitudinally of the railway car with said hitch being positioned between the guide rails, each rail having a rail section generally adjacent the hitch mounted for movement between an erect position projecting above the deck and a retracted position closely adjacent the upper surface of the deck, and means biasing the movable rail sections to erect position, said rail sections being moved to retracted position against said biasing means upon a generally downward force being exerted against the rail sections and being returned to erect position under the influence of said biasing means after said downward force is removed.

2. A railway flat car adapted to transport a trailer secured thereon comprising, a generally flat deck, a pair of spaced, generally parallel guide rails on the deck positioned intermediate the sides of the deck and extending longitudinally of the railway car, each rail comprising a plurality of rail sections mounted for independent movement relative to each other between an erect position projecting above the deck and a retracted position closely adjacent the upper surface of the deck, and means biasing each movable rail section to an erect position independent of the remaining movable rail sections, said rail sections being moved to retracted position against said biasing means upon a generally downward force being exerted against the rail sections and being returned to erect position under the influence of said biasing means after said downward force is removed.

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3. A railway flat car as set forth in claim 2 wherein said movable rail sections are movable in a generally vertical plane between erect and retracted positions, and spring means bias each rail section upwardly to erect position.

4. A railway flat car as set forth in claim 2 wherein lost motion means connect the rail sections of each rail and permit independent movement of one of said sections relative to its adjacent sections whereby a container or the like may be positioned on said movable rail sections.

5. A railway flat car as set forth in claim 2 wherein said deck has a cutout portion to receive each movable rail section, said biasing means being mounted below the surface of the deck and continuously urging an associated rail section upwardly.

6. A railway flat car adapted to carry a trailer in transit comprising, a generally flat deck, a hitch mounted on the deck adapted to engage and secure the kingpin of the trailer, a pair of spaced, generally parallel guide rails on the deck extending longitudinally of the railway car with said hitch being positioned between the guide rails, said guide rails extending upwardly from the deck a distance at least around three inches and adapted to engage the surfaces of adjacent roadway wheels of a tractor or trailer to aid in guiding the wheels along the surface of the deck, each rail having a rail section adjacent the

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hitch mounted for movement between an erect position in which it projects a distance of at least around three inches from the surface of the deck and a retracted position closely adjacent the surface of the deck, and means biasing the movable rail sections to erect position, said rail sections being moved to retracted position against said biasing means upon a generally downward force being exerted against the rail sections.

7. A railway flat car as set forth in claim 6 wherein said movable rail sections are mounted on the deck surface for pivotal movement about a longitudinally extending generally horizontal axis between an erect position and a folded retracted position on the surface of the deck, said rail sections being inclined with respect to a vertical plane when in erect position whereby a downward force exerted against the upper surface of said rail sections tends to pivot the rail sections downwardly against the bias of said biasing means.

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