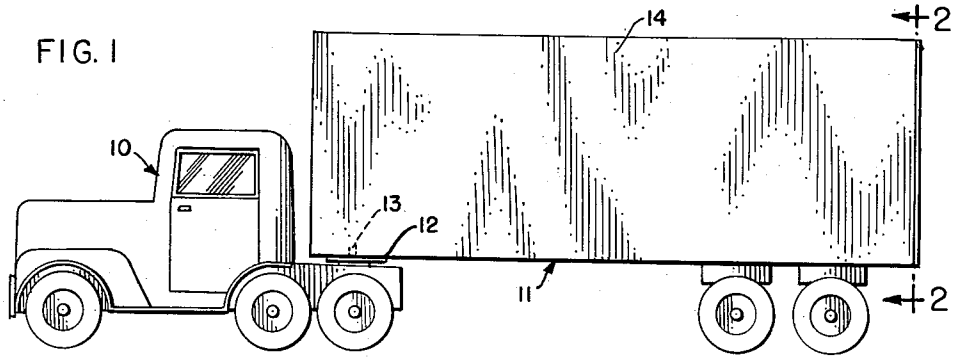
Sept. 19, 1961 C. L. FERNANDES 3,000,666

PROTECTIVE DEVICES FOR DOORS OF SHIPPING CONTAINERS

Filed Aug. 30, 1960 3 Sheets-Sheet 1

FIG. 1



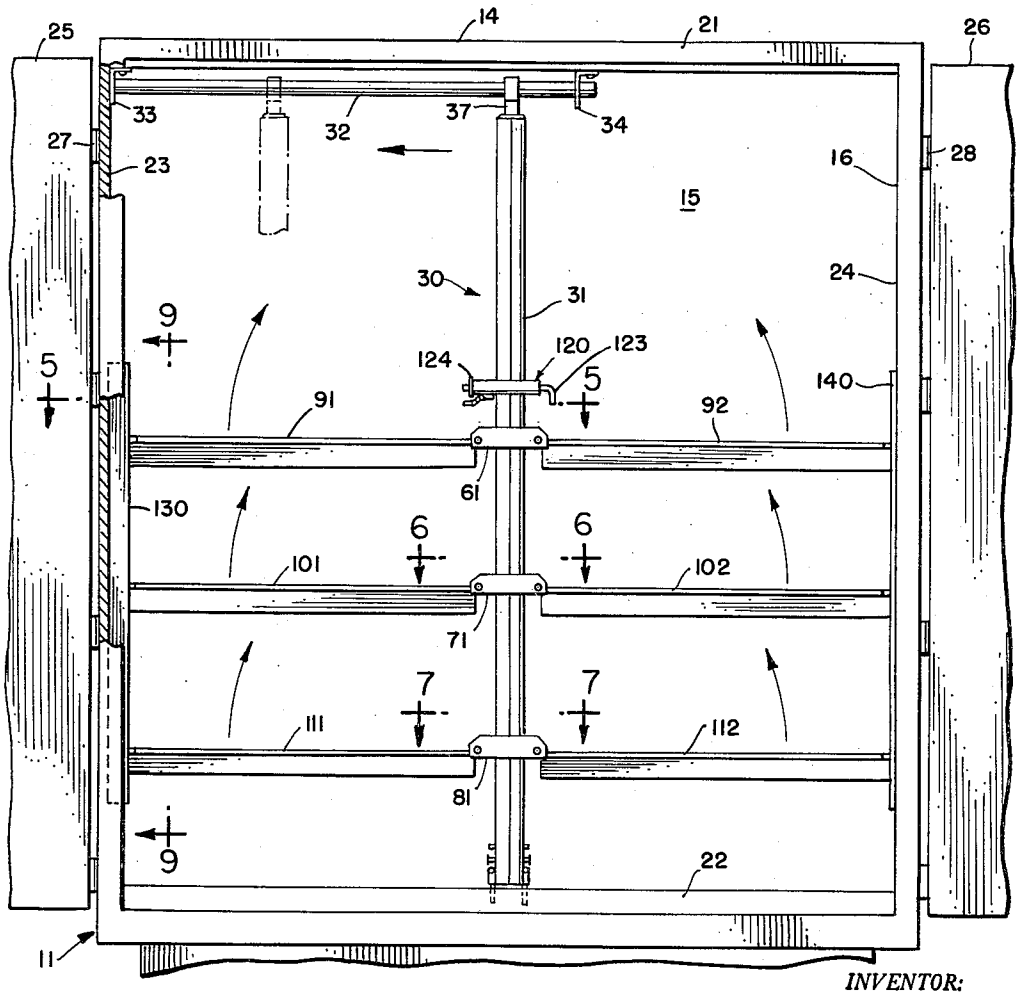


FIG. 2

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FIG. 3

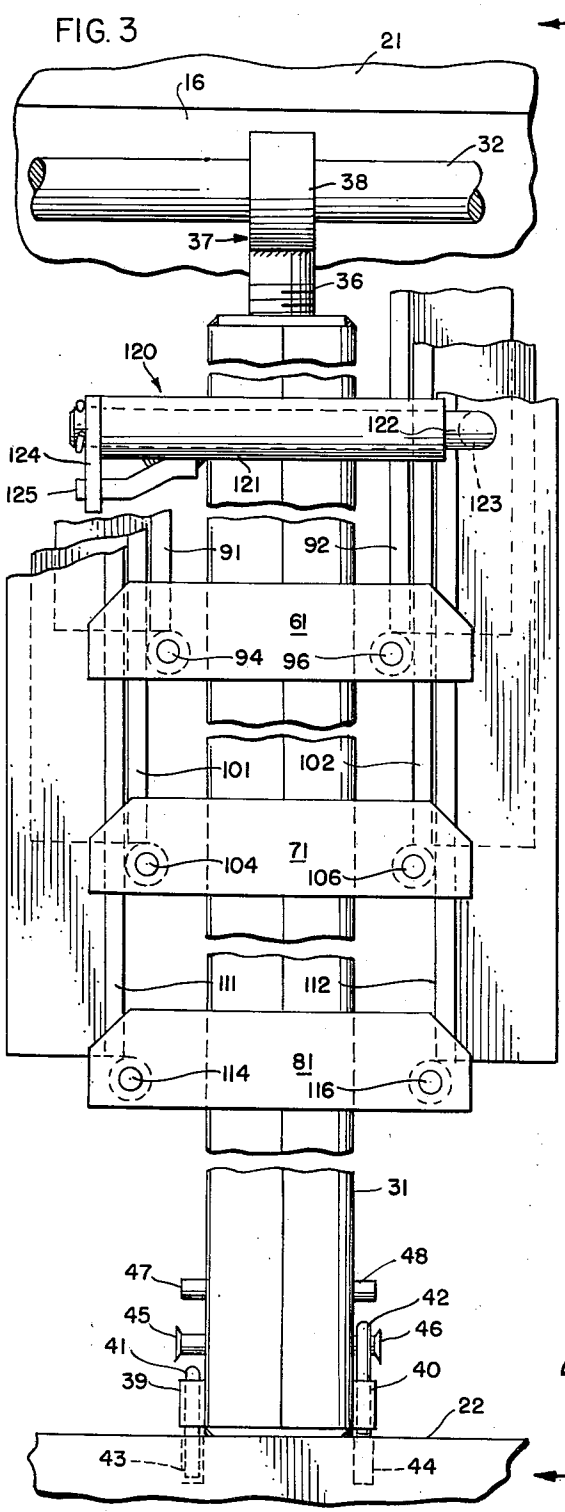
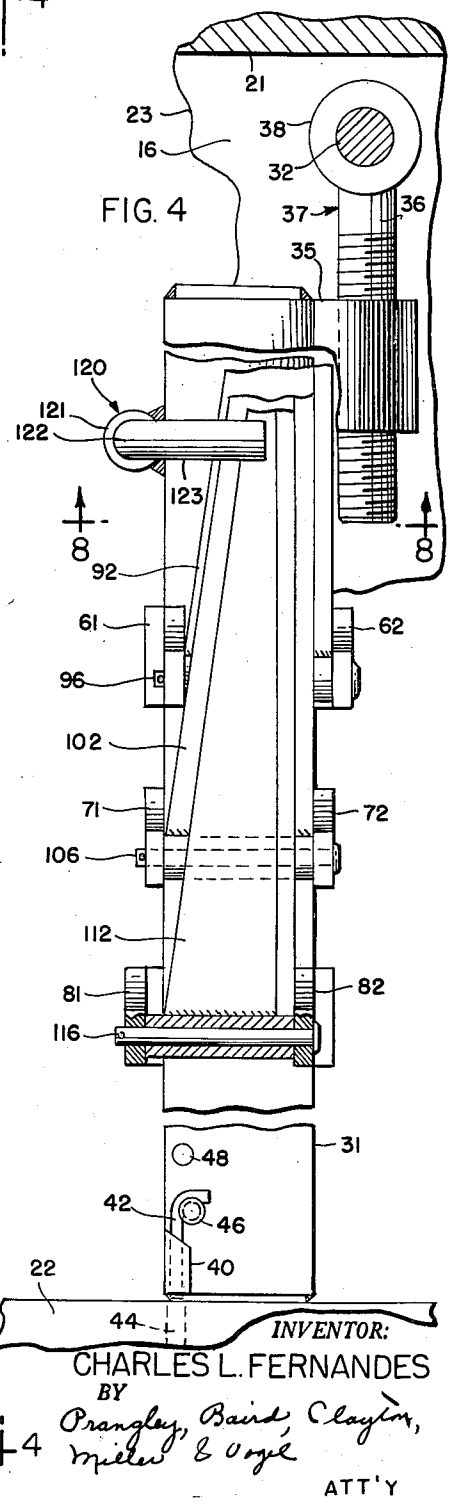


FIG. 4



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PROTECTIVE DEVICES FOR DOORS OF SHIPPING CONTAINERS

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FIG. 5

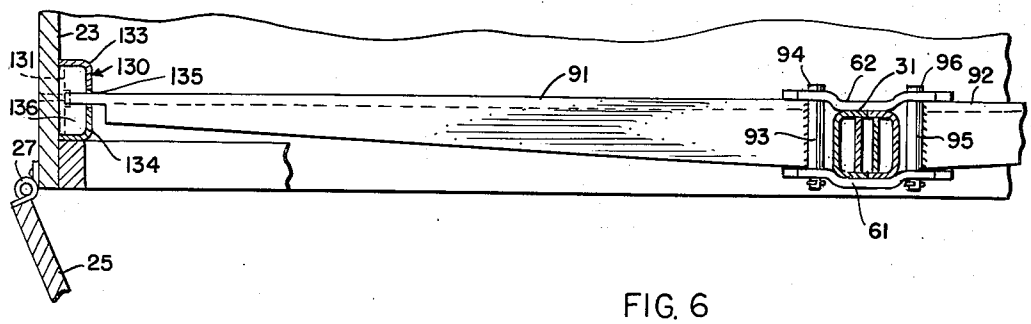


FIG. 6

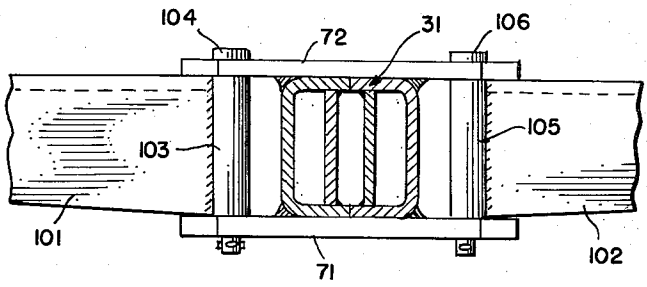


FIG. 9

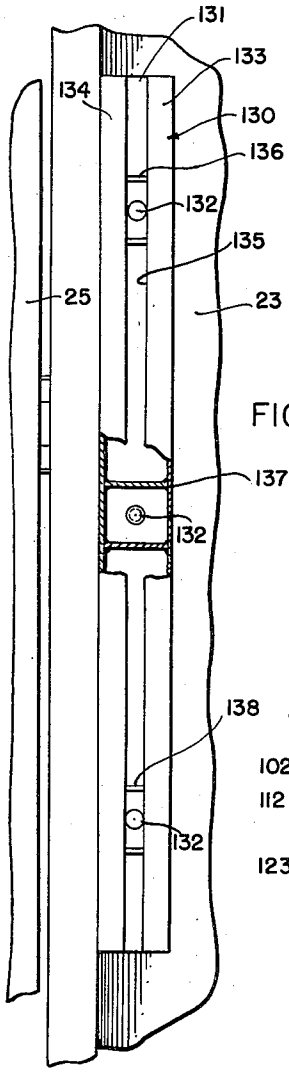


FIG. 7

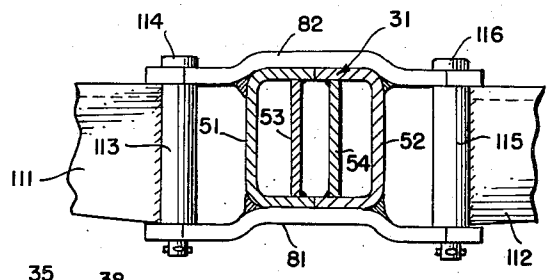
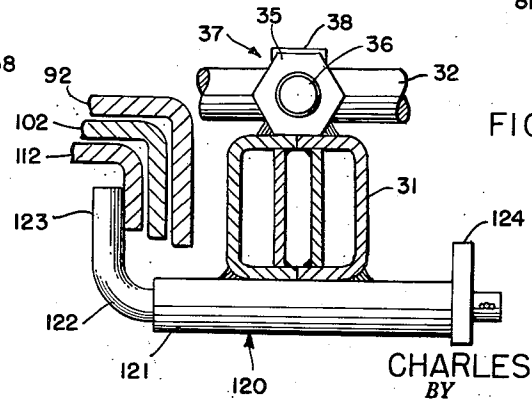


FIG. 8



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PROTECTIVE DEVICES FOR DOORS OF SHIPPING CONTAINERS

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Filed Aug. 30, 1960, Ser. No. 52,901
14 Claims. (Cl. 296—105)

The present invention relates to protective devices for doors of shipping containers, and more particularly to such devices for use in protecting the rear doors of road semi-trailers.

It is the general object of the invention to provide in a shipping container including a body defining a lading compartment and a doorway thereinto and door structure carried by the body and selectively movable between open and closed positions with respect to the doorway, a protective device of improved and simplified construction and arrangement that may be readily incorporated into the body at the doorway and that affords the door structure substantially complete protection against damage by shifting cargo in the lading compartment.

Another object of the invention is to provide in a shipping container of the type noted, a protective device of the character described, wherein the protective device is mounted on the body at the doorway for ready movements in a simple manner between an active position of use located substantially centrally of the doorway and an inactive position of storage located at one side of the doorway, whereby the protective device in its inactive position is disposed in non-interfering relation with the doorway, so as to facilitate ready loading and unloading of cargo through the doorway and with respect to the lading compartment.

A further object of the invention is to provide in a road semi-trailer including a body defining a lading compartment and a rear doorway thereinto and rear door structure carried by the body and selectively movable between open and closed positions with respect to the doorway, a protective device for the rear door structure that may be readily incorporated into the body at the rear doorway either as factory equipment incident to the manufacture of a new semi-trailer or as accessory equipment incident to the modification of an old semi-trailer.

A further object of the invention is to provide a protective device of the character described, that is of simple and economical construction and arrangement, that comprises a minimum number of parts, that can be installed in a ready manner without extensive modification of the freight carrier into which the installation is to be made, and that requires no power appliances in the operation thereof.

Further features of the invention pertain to the particular arrangement of the elements of the protective device, whereby the above-outlined and additional operating features thereof are attained.

The invention, both as to its organization and method of operation, together with further objects and advantages thereof, will best be understood by reference to the following specification, taken in connection with the accompanying drawings, in which:

FIGURE 1 is a side elevational view of a tractor coupled to a road semi-trailer incorporating a protective device for the rear door of the lading compartment thereof and embodying the present invention;

FIG. 2 is an enlarged fragmentary rear elevational view, partly broken away, of the road semi-trailer shown in FIG. 1, illustrating the protective device in its operative position of use and the rear doors of the semi-trailer in their open positions;

FIG. 3 is a greatly enlarged fragmentary rear view of the central portion of the protective device of FIG. 2;

FIG. 4 is a greatly enlarged fragmentary side view of the central portion of the protective device of FIG. 3;

FIGS. 5, 6 and 7 are similar enlarged fragmentary horizontal views taken successively through the central portion of the protective device in the direction of the arrows along the successive lines 5—5, 6—6 and 7—7, of FIG. 2, and illustrating the pivotal movements of the corresponding three pairs of arms upon the central standard of the protective device;

FIG. 8 is another enlarged fragmentary horizontal view, similar to FIGS. 5, 6 and 7, this view being taken in the direction of the arrows along the line 8—8 in FIG. 4, and illustrating the latch mechanism carried by the central standard and cooperating with the three pairs of arms pivotally mounted thereupon; and

FIG. 9 is a fragmentary vertical view, partly broken away, of one of the two posts that are respectively arranged at the opposite sides of the doorway, and illustrating the three keepers provided by the one post for cooperation with the outer ends of the three respective arms provided on the corresponding one side of the standard when the three arms mentioned occupy their operative positions, as shown in FIG. 2, this view being taken in the direction of the arrows along the line 9—9 in FIG. 2.

Referring now to FIGS. 1 and 2 of the drawings, there are illustrated a road tractor 10 and a road semi-trailer 11, the rear end of the tractor 10 being provided with a fifth-wheel mechanism 12 that is coupled to a king pin 13 carried by the lower front end of the semi-trailer 11. The semi-trailer 11 also comprises a body 14 including wall structure defining a lading compartment 15 therein and having a rear doorway 16 thereinto. As illustrated, the wall structure of the body 14 includes a top or ceiling 21, a bottom or floor 22 and a pair of upstanding side walls 23 and 24, as well as a pair of rear doors 25 and 26 respectively carried by the side walls 23 and 24 and selectively movable into open and closed positions with respect to the rear doorway 16. As illustrated, the outer edge of the rear door 25 is suitably supported by hinge mechanism 27 upon the extreme rear end of the side wall 23 and the outer edge of the rear door 26 is suitably supported by hinge mechanism 28 upon the extreme rear end of the side wall 24. Of course, the rear doors 25 and 26 carry suitable latch mechanism, not shown, whereby they may be securely fastened together and to the wall structure of the body 14 when the rear doors 25 and 26 occupy their closed positions, all in a conventional manner.

Further, the road semi-trailer 11 comprises a protective device 30 embodying the features of the present invention and mounted in the rear doorway 16 of the body 14; which protective device 30 comprises a standard 31 that is mounted for lateral movements in the doorway 16 between an active position of use disposed substantially centrally in the doorway 16, as illustrated in FIG. 2, and an inactive position of storage disposed adjacent to the side wall 23 and accordingly in non-interfering relation with the loading and unloading of cargo into the lading compartment 15 through the doorway 16. As best illustrated

in FIGS. 2, 3, 4, and 8, a laterally extending guide member or bar 32 is arranged in the upper portion of the doorway 16 and supported upon two cooperating mounting brackets 33 and 34 carried by the top 21 of the body 14. In the arrangement, the bracket 33 is disposed closely adjacent to the lefthand side wall 23, as viewed in FIG. 2, while the bracket 34 is disposed somewhat toward the right of the vertical center line of the doorway 16; whereby the guide bar 32 extends from the left-hand side wall 23 toward the right somewhat past the vertical center line of the doorway 16 and is positioned immediately below the top of the doorway 16 and is arranged somewhat inwardly of the extreme rear end of the doorway 16. The upper end of the standard 31 carries an upstanding internally threaded nut 35 that receives the externally threaded shank 36 of an eye bolt 37 that includes an eye 38 that is mounted upon the guide bar 32. Accordingly, the standard 31 is slidable laterally in supported upstanding position between its active position and its inactive position, while supported by the guide bar 32 through the cooperation of the eye bolt 37.

The lower end of the standard 31 carries two hollow sleeves 39 and 40 on the opposite sides thereof that respectively slidably carry two latch bolts 41 and 42. The latch bolt 41 is movable between a downwardly projected postion disposed in latched relation with respect to a keeper opening 43 provided in the top of the floor 22 adjacent to the central portion of the doorway 16, and a raised position disposed in unlatched relation with respect to the keeper opening 43. Likewise, the latch bolt 42 is movable between a downwardly projected position disposed in latched relation with respect to a keeper opening 44 provided in the top of the floor 22 adjacent to the central portion of the doorway 16, and a raised position disposed in unlatched relation with respect to the keeper opening 44. Also the opposite sides of the standard 31 carry two oppositely directed pins 45 and 46 that are adapted to cooperate with the respective latch bolts 41 and 42 in their unlatched positions; and also the opposite sides of the standard 31 carry two outwardly projecting stops 47 and 48 respectively disposed above the pins 45 and 46, so as to prevent accidental displacement of the latch bolts 41 and 42 from the respective sleeves 39 and 40 incident to movements of the respective latch bolts 41 and 42 into their unlatched positions.

In view of the above description, it will be understood that when the standard 31 is moved into its active position of use disposed substantially centrally in the doorway 16, it may be securely latched in place at the lower end thereof by operation of the latch bolts 41 and 42 into their latched positions with respect to the respectively associated keeper openings 43 and 44 provided in the floor wall 22 in the bottom of the doorway 16. Also, at this time, the upper end of the standard 31 is securely retained in positon by virtue of the cooperation between the eye bolt 37 and the guide bar 32. In this connection, it is noted that the vertical position of the standard 31 in its operative position of use substantially centrally of the doorway 16 may be adjusted by rotation thereof about the shank 36 of the eye bolt 37, since the upper end of the standard 31 carries the threaded nut 35 disposed in threaded engagement with the shank 36 of the eye bolt 37. This facility is very advantageous, as the same accommodates adjustment of the lower end of the standard 31 into close proximity with respect to the floor 22 at the bottom of the doorway 16 prior to projection of the latch bolts 41 and 42 into their latched positions, thereby to minimize the shear stresses that may be exerted upon latch bolts 41 and 42 by the standard 31.

Of course, it will be understood that keeper openings, not shown, may be provided, if desired, in the floor wall 22 adjacent to the left-hand side wall 23 and in the bottom of the doorway 16, so as selectively to receive the latch bolts 41 and 42 for the purpose of restraining or latching in place the standard 31 in its inactive position of storage disposed closely adjacent to the side wall 23 on the left-hand side of the doorway 16.

As best shown in FIGS. 5, 6, 7 and 8, the standard 31 is of substantially hollow box-like configuration, including a pair of channel-like structural members 51 and 52 and a pair of reinforcing plates 53 and 54. In the arrangement, the reinforcing plate 53 is positioned between the flanges of the channel member 51 and suitably welded in place at the opposite ends thereof, and the reinforcing plate 54 is positioned between the flanges of the channel member 53 and suitably welded in place at the opposite ends thereof. Ultimately the flanges of the two channel members 51 and 52 are placed in edge-abutting relationship with each other and suitably welded together in order to define the hollow box-like structure of the standard 31. Further, the standard 31 carries an upper pair of front and rear laterally extending brackets 61 and 62 suitably welded to the respective front and rear sides thereof, as best shown in FIG. 5. Also the standard 31 carries an intermediate pair of front and rear laterally extending brackets 71 and 72 suitably welded to the respective front and rear sides thereof, as best shown in FIG. 6. Further, the standard 31 carries a lower pair of front and rear laterally extending brackets 81 and 82 suitably welded to the respective front and rear sides thereof, as best shown in FIG. 7. As shown in FIG. 2, the pairs of brackets 61, 62 and 71, 72 and 81, 82 are disposed in vertically spaced-apart relation. The upper pair of brackets 61, 62 are slightly rearwardly offset with respect to the vertical center line of the standard 31, as shown in FIG. 5; the intermediate pair of brackets 71, 72 are disposed substantially centrally with respect to the vertical center line of the standard 31, as shown in FIG. 6; and the lower pair of brackets 81, 82 are slightly forwardly offset with respect to the vertical center line of the standard 31, as shown in FIG. 7.

The upper pair of brackets 61, 62 carry an upper pair of arms 91, 92 respectively arranged left and right, as viewed in FIG. 2; the inner end of the left arm 91 carrying a barrel 93 that is pivotally mounted upon a pivot pin 94 extending longitudinally between the outer left-hand ends of the brackets 61 and 62, as shown in FIG. 5; and the inner end of the right arm 92 carrying a barrel 95 that is pivotally mounted upon a pivot pin 96 extending longitudinally between the outer right-hand ends of the brackets 61 and 62. Accordingly, the upper pair of arms 91 and 92 are respectively pivotally mounted upon the pivot pins 94 and 96 for selective movements between substantially horizontal active positions outstanding from the opposite sides of the standard 31 and projecting laterally across the corresponding sides of the doorway 16, as shown in FIG. 2, and substantially vertical inactive positions folded respectively adjacent to the opposite sides of the standard 31, as shown in FIGS. 3 and 4.

Similarly, the intermediate pair of brackets 71, 72 carry an intermediate pair of arms 101, 102 respectively arranged left and right, as viewed in FIG. 2; the inner end of the left arm 101 carrying a barrel 103 that is pivotally mounted upon a pivot pin 104 extending longitudinally between the outer left-hand ends of the brackets 71 and 72, as shown in FIG. 6; and the inner end of the right arm 102 carrying a barrel 105 that is pivotally mounted upon a pivot pin 106 extending longitudinally between the outer right-hand ends of the brackets 71 and 72. Accordingly, the intermediate pair of arms 101 and 102 are respectively pivotally mounted upon the pivot pins 104 and 107 for selective movements between substantially horizontal active positions outstanding from the opposite sides of the standard 31 and projecting laterally across the corresponding sides of the doorway 16, as shown in FIG. 2, and substantially vertical inactive positions folded respectively adjacent to the opposite sides of the standard 31, as shown in FIGS. 3 and 4.

Similarly, the lower pair of brackets 81, 82 carry a lower pair of arms 111, 112 respectively arranged left and right, as viewed in FIG. 2; the inner end of the left arm 111 carrying a barrel 113 that is pivotally mounted upon a pivot pin 114 extending longitudinally between the outer left-hand ends of the brackets 81 and 82, as shown in FIG. 7; and the inner end of the right arm 112 carrying a barrel 115 that is pivotally mounted upon a pivot pin 116 extending longitudinally between the outer right-hand ends of the brackets 81 and 82. Accordingly, the lower pair of arms 111 and 112 are respectively pivotally mounted upon the pivot pins 114 and 116 for selective movements between substantially horizontal active positions outstanding from the opposite sides of the standards 31 and projecting laterally across the corresponding sides of the doorway 16, as shown in FIG. 2, and substantially vertical inactive positions folded respectively adjacent to the opposite ends of the standard 31, as shown in FIGS. 3 and 4.

Further, the standard 31 carries latch mechanism 120 disposed on the front side thereof and positioned above the upper pair of brackets 61, 62, as shown in FIGS. 2, 3, 4 and 8; which latching mechanism 120 is operatively associated with the arms 91, 92 and 101, 102 and 111, 112 and is selectively operative to restrain the arms mentioned in their inactive folded positions, as shown in FIGS. 3, 4 and 8, and to release the arms mentioned for movements into their active positions, as shown in FIG. 2. More particularly, the latch mechanism 120 comprises a laterally extending barrel 121 rigidly secured to the front side of the standard 31, and rotatably mounted therein is a substantially L-shaped latch bolt 122 having a latch projection 123 provided on one end thereof and cooperating with the arms 92, 102 and 112, and carrying a latch plate 124 provided on the other end thereof and cooperating with the arms 92, 102 and 112. Further, the barrel 121 carries a stop 125 that cooperates with the latch plate 124 in order to limit the relative rotation of the latch bolt 122 with respect to the barrel 121.

In the arrangement, each of the arms 92, 102 and 112 is substantially L-shaped in lateral cross-section so that the arms mentioned are disposed in nested relation with respect to each other when they occupy their inactive substantially vertical positions folded upwardly adjacent to the right-hand side of the standard 31; and at this time, the latch bolt 122 may be rotated into its latched position in order to cause the latch projection 123 to overhook the adjacent flange provided on the lower right-hand arm 112, thereby to restrain the right-hand arms 92, 102 and 112 in their inactive positions, as illustrated in FIGS. 3 and 4. Similarly, each of the arms 91, 101 and 111 is substantially L-shaped in lateral cross-section so that the arms mentioned are disposed in nested relation with respect to each other when they occupy their inactive substantially vertical positions folded upwardly adjacent to the left-hand side of the standard 31; and at this time, the latch bolt 122 may be rotated into its latched position in order to cause the latch plate 124 to overhook the adjacent flange provided on the lower left-hand arm 111, thereby to restrain the left-hand arms 91, 101 and 111 in their inactive positions, as illustrated in FIGS. 3 and 4.

More particularly, the latch bolt 122 has a latched position, wherein the latch projection 123 latches the three right arms 92, 102 and 112 in their inactive positions, and wherein the latch plate 124 latches the three left arms 91, 101 and 111 in their inactive positions. Also, the latch bolt 122 is rotatable from its latched position of FIGS. 3 and 4 progressively through three unlatched positions; whereby the pairs of arms 111, 112 and 101, 102 and 91, 92 are progressively released for movements between their inactive positions of FIGS. 3 and 4 into their active positions of FIG. 2. In other words, as the latch bolt 122 is rotated from its latched position, the lower pair of arms 111 and 112 is first released and then the intermediate pair of arms 101 and 102 is next released and then the upper pair of arms 91 and 92 is ultimately released; whereby the pair of arms mentioned may be moved progressively in pairs from their inactive positions of FIGS. 3 and 4 into their active positions of FIG. 2.

Of course, it is apparent that when all of the arms mentioned occupy their active positions of FIG. 2, they may be moved or returned progressively in pairs therefrom back into their inactive positions of FIGS. 3 and 4 and progressively latched in place by appropriate manipulation of the latch bolt 122. In this return movement of the arms mentioned from their active positions of FIG. 2 into their inactive positions of FIGS. 3 and 4, the upper arms 91 and 92 are first returned, then the intermediate arms 101 and 102 are returned, and ultimately the lower arms 111 and 112 are returned.

Further, the protective device 30 comprises an upstanding pair of posts 130 and 140 arranged in the doorway 16 and respectively disposed adjacent to the side wall 23 and adjacent to the side wall 24, as best shown in FIGS. 2, 5 and 9, the post 130 receiving the extreme outer ends of the left-arms 91, 101 and 111; and the post 140 receiving the extreme outer ends of the right-arms 92, 102 and 112.

The construction and arrangement of the posts 130 and 140 are identical; whereby the post 130, as best shown in FIGS. 5 and 9 comprises a base plate 131 that is suitably secured by a plurality of bolts 132 to the adjacent side wall 23 in the doorway 16 and inwardly of the normal position of the left door 25 in its closed position. Also, the post 130 comprises front and rear substantially L-shaped structural elements 133 and 134 that are suitably secured to the adjacent front and rear edges of the base plate 131 and disposed in spaced-apart relation to provide an upstanding slot 135 in the adjacent right-hand side of the composite post 130. Also three vertically spaced-apart channel elements 136, 137 and 138 are arranged interiorly of the composite hollow post 130 and constitute latch keepers respectively operatively associated with the corresponding extreme left-hand outer ends of the arms 91, 101 and 111 when the corresponding arms mentioned occupy their active positions of FIG. 2. As best illustrated in FIG. 5, the extreme outer end of the left arm 91 terminates in a latch projection that projects through the slot 135 provided in the post 130 when the left arm 91 occupies its active position and which latch projection is received by the cooperating latch keeper 136 provided in the upper portion of the hollow post 130. The extreme outer ends of the intermediate and lower arms 101 and 111 are similarly constructed; whereby the corresponding latch projections respectively provided thereon project respectively through the slot 135 and respectively cooperate with the intermediate and lower latch keepers 137 and 138 when the intermediate and lower arms 101 and 111 respectively occupy their active positions of FIG. 2.

In view of the foregoing description of the construction and arrangement of the post 130 providing the three latch keepers 136, 137 and 138 respectively cooperating with the latch projections respectively provided on the extreme outer ends of the respective latch arms 91, 101 and 111 in their active positions of FIG. 2, it will be understood that the post 140 is constructed in an identical manner providing three latch keepers, not shown, that respectively cooperate with the latch projections respectively provided on the extreme outer ends of the arms 92, 102 and 112 in their active positions of FIG. 2.

In view of the foregoing description of the construction and arrangement of the protective device 30, it will be understood that the standard 31 is selectively movable between its active position of use disposed substantially centrally of the doorway 16, as shown in FIG. 2, and its inactive position of storage disposed adjacent to

the post 130 at the left-hand side of the doorway 16. When the standard 31 occupies either of its aforesaid positions, it may be selectively locked in place utilizing the latch bolts 41 and 42 in the manner previously explained; and it will be recalled that the movement of the standard 31 between its two positions mentioned is guided by the guide bar 32. When the standard 31 occupies its active position of use disposed substantially centrally of the doorway 16 and suitably latched in place as previously explained, the pairs of arms 111, 112, and 101, 102 and 91, 92 may be successively operated from their inactive positions of FIGS. 3 and 4 into their active positions of FIG. 2, by selective manipulation of the latch bolt 122 of the latch mechanism 120, in the manner previously explained. As each pair of the arms 111, 112 and 101, 102 and 91, 92 is moved into its active position of FIG. 2, the latch projections respectively carried by the extreme outer ends thereof enter the cooperating slots provided in the respective posts 130 and 140 and respectively cooperate with the associated latch keepers provided in the posts 130 and 140 in the manner previously explained. At this time, the protective device 30 occupies its active position and affords protection to the doors 25 and 26 in their closed positions against damage by shifting cargo in the lading compartment 15 of the body 14 so as to prevent injury or damage to the latch and lock structure, not shown, that is conventionally carried by the rear doors 25 and 26.

Of course, when it is necessary to load or to unload the lading compartment 15, the protective device 30 is returned to its position of storage; and specifically the arms 91, 92 and 101, 102 and 111, 112 are first returned into their inactive positions and restrained therein by the latch mechanism 120; then the latch bolts 41 and 42 are returned into their unlatched positions; and then the standard 31 may then be rotated about its axis in order to lift the same upon the associated eye bolt 37 carried by the guide bar 32. Ultimately, the standard 31 is returned from its active position of use into its storage position disposed adjacent to the post 130 at the left-hand side of the doorway 16; and in its inactive position of storage, the standard 31 may be restrained by again utilizing the latch bolts 41 and 42. Accordingly, it will be understood that when the protective device 30 occupies its inactive position of storage, as explained above, it is disposed in non-interfering or non-blocking relation with respect to the doorway 16; whereby the cargo may be readily loaded and unloaded with respect to the lading compartment 15 without interference by the protective device 30.

In view of the foregoing description of the construction and arrangement of the protective device 30, it will be immediately appreciated that the same may be installed either as factory equipment incident to the manufacture of a new road semi-trailer 11 or the same may be readily installed as accessory equipment in an old semi-trailer 11 incident to modification thereof. In the installation of the protective device 30, it will be understood that the same must be mounted in the doorway 16 so that the principal elements 31, 32, 130 and 140 thereof are disposed inwardly of the rear doors 25 and 26 in their normal closed positions, so as to prevent interference with the normal movements of the rear doors 25 and 26 between their open and closed positions with respect to the doorway 16, and so that the protective device 30 occupies the necessary position forwardly of the rear doors 25 and 26 in their closed positions for the purpose of affording protection thereto against damage resulting from shifting of the cargo in the lading compartment 15.

In the foregoing description, the protective device 30 has been set forth particularly with respect to the road semi-trailer 11; however, it will be appreciated that the same may be readily incorporated into a truck or other freight-containing structure; which freight-containing structure may be transported by road, rail, water or air; whereby in the appended claims, the expression "shipping container" is employed broadly to mean any type of structure in which cargo is shipped by any suitable instrumentalities.

In view of the foregoing, it is apparent that there has been provided in a shipping container including a body defining a lading compartment and a doorway thereinto and door structure carried by the body and selectively movable between open and closed positions with respect to the doorway, a protective device for preventing damage to the door structure by shifting cargo contained in the lading compartment; which protective device is of improved and simplified construction and arrangement.

While there has been described what is at present considered to be the preferred embodiment of the invention, it will be understood that various modifications may be made therein, and it is intended to cover in the appended claims all such modifications as fall within the true spirit and scope of the invention.

What is claimed is:

1. In a shipping container including a body defining a lading compartment and a doorway thereinto, and door structure carried by said body and selectively movable between open and closed positions with respect to said doorway; a protective device for said door structure comprising a standard, means for removably securing said standard to said body in an upstanding substantially central position in said doorway, a plurality of vertically spaced-apart first arms respectively pivotally connected at the inner ends thereof to said standard and selectively movable between substantially vertical inactive positions folded adjacent to said standard and substantially horizontal active positions outstanding from one side of said standard and projecting across the corresponding one side of said doorway, a plurality of vertically spaced-apart first keepers carried by said body at said one side of said doorway and respectively receiving the outer ends of said first arms in their active positions, a plurality of vertically spaced-apart second arms respectively pivotally connected at the inner ends thereof to said standard and selectively movable between substantially vertical inactive positions folded adjacent to said standard and substantially horizontal active positions outstanding from the other side of said standard and projecting across the corresponding other side of said doorway, and a plurality of vertically spaced-apart second keepers carried by said body at said other side of said doorway and respectively receiving the outer ends of said second arms in their active positions, said standard and said arms and said keepers being disposed in said doorway inwardly of said door structure and in non-interfering relation with the movements thereof between its open and closed positions, whereby said device with said arms in their active positions protects said door structure in its closed position against damage by shifting cargo in said lading compartment.

2. The protective device set forth in claim 1, and further comprising latch mechanism carried by said standard and selectively operative between a latched position restraining said arms in their inactive positions and an unlatched position releasing said arms for movements into their active positions.

3. The protective device set forth in claim 1, and further comprising latch mechanism carried by said standard and selectively operative between a latched position and a plurality of unlatched positions, said latch mechanism in its latched position restraining all of said arms into their inactive positions, said latch mechanism in its successive unlatched positions successively releasing said first and second arms in pairs from the lower end of said standard toward the upper end thereof for successive movements in pairs from their inactive positions into their active positions.

4. The protective device set forth in claim 1, wherein

each of said first and second arms has a substantially L-shaped cross-section, said first and second arms being respectively arranged in nested relation in their inactive positions.

5. The protective device set forth in claim 1, wherein there are at least three of said first arms and at least three of said second arms, and said first and second arms are arranged in three coordinate pairs in their active positions.

6. In a shipping container including a body defining a lading compartment and a doorway thereinto, and door structure carried by said body and selectively movable between open and closed positions with respect to said doorway; a protective device for said door structure comprising a standard, means for removably securing said standard to said body in an upstanding substantially central position in said doorway, a plurality of vertically spaced-apart first arms respectively pivotally connected at the inner ends thereof to said standard and selectively movable between substantially vertical inactive positions folded adjacent to said standard and substantially horizontal active positions outstanding from one side of said standard and projecting across the corresponding one side of said doorway, a first upstanding post carried by said body at said one side of said doorway and provided with a plurality of vertically spaced-apart first keepers respectively receiving the outer ends of said first arms in their active positions, a plurality of vertically spaced-apart second arms respectively pivotally connected at the inner ends thereof to said standard and selectively movable between substantially vertical inactive positions folded adjacent to said standard and substantially horizontal active positions outstanding from the other side of said standard and projecting across the corresponding other side of said doorway, and a second upstanding post carried by said body at said other side of said doorway and provided with a plurality of vertically spaced-apart second keepers respectively receiving the outer ends of said second arms in their active positions, said standard and said arms and said posts being disposed in said doorway inwardly of said door structure and in non-interfering relation with the movements thereof between its open and closed positions, whereby said device with said arms in their active positions protects said door structure in its closed position against damage by shifting cargo in said lading compartment.

7. In a shipping container including a body defining a lading compartment and a doorway thereinto, and door structure carried by said body and selectively movable between open and closed positions with respect to said doorway; a protective device for said door structure comprising a standard, means for removably securing said standard to said body in an upstanding substantially central position in said doorway, a plurality of vertically spaced-apart first arms respectively pivotally connected at the inner ends thereof to said standard and selectively movable between substantially vertical inactive positions folded adjacent to said standard and substantially horizontal active positions outstanding from one side of said standard and projecting across the corresponding one side of said doorway, the outer end of each of said first arms terminating in an outwardly directed first projection, a first upstanding post carried by said body at said one side of said doorway and provided with a plurality of vertically spaced-apart first slots therein respectively receiving said first projections in the active positions of said first arms, a plurality of vertically spaced-apart second arms respectively pivotally connected at the inner ends thereto to said standard and selectively movable between substantially vertical inactive positions folded adjacent to said standard and substantially horizontal active positions outstanding from the other side of said standard and projecting across the corresponding other side of said doorway, the outer end of each of said second arms terminating in an outwardly directed second projection, and a second upstanding post carried by said body at said other side of said doorway and provided with a plurality of vertically spaced-apart second slots therein respectively receiving said second projections in the active positions of said second arms, said standard and said arms and said posts being disposed in said doorway inwardly of said door structure and in non-interfering relation with the movements thereof between its open and closed positions, whereby said device with said arms in their active positions protects said door structure in its closed position against damage by shifting cargo in said lading compartment.

8. In a shipping container including a body defining a lading compartment and a doorway thereinto, and door structure carried by said body and selectively movable between open and closed positions with respect to said doorway; a protective device for said door structure comprising a standard, means for removably securing said standard to said body in an upstanding substantially central position in said doorway, a plurality of vertically spaced-apart brackets rigidly secured to said standard, a plurality of first arms respectively pivotally connected at the inner ends thereof to first ends of said brackets and selectively movable between substantially vertical inactive positions folded adjacent to said standard and substantially horizontal active positions outstanding from one side of said standard and projecting across the corresponding one side of said doorway, a plurality of vertically spaced-apart first keepers carried by said body at said one side of said doorway and respectively receiving the outer ends of said first arms in their active positions, a plurality of second arms respectively pivotally connected at the inner ends thereof to second ends of said brackets and selectively movable between substantially vertical inactive positions folded adjacent to said standard and substantially horizontal active positions outstanding from the other side of said standard and projecting across the corresponding other side of said doorway, and a plurality of vertically spaced-apart second keepers carried by said body at said other side of said doorway and respectively receiving the outer ends of said second arms in their active positions, said standard and said arms and said keepers being disposed in said doorway inwardly of said door structure and in non-interfering relation with the movements thereof between its open and closed positions, whereby said device with said arms in their active positions protects said door structure in its closed position against damage by shifting cargo in said lading compartment.

9. In a shipping container including a body defining a lading compartment and a doorway thereinto, and door structure carried by said body and selectively movable between open and closed positions with respect to said doorway; a protective device for said door structure comprising a standard, means mounting said standard upon said body for movements between active and inactive positions with respect to said doorway, said standard in its active position being disposed in an upstanding position and located substantially centrally in said doorway, said standard in its inactive position being disposed in an upstanding position and located at one side of said doorway in non-interfering relation with ready placement and removal of cargo through said doorway and with respect to said lading compartment, means for selectively securing to said body said standard in its active position, a plurality of vertically spaced-apart first arms respectively pivotally connected at the inner ends thereof to said standard and selectively movable when said standard is in its active position between substantially vertical inactive positions folded adjacent to said standard and substantially horizontal active positions outstanding from one side of said standard and projecting across the corresponding one side of said doorway, a plurality of vertically spaced-apart first keepers carried by said body at said one side of said doorway and respectively receiving the outer ends of said

first arms in their active positions, a plurality of vertically spaced-apart second arms respectively pivotally connected at the inner ends thereof to said standard and selectively movable when said standard is in its active position between substantially vertical inactive positions folded adjacent to said standard and substantially horizontal active positions outstanding from the other side of said standard and projecting across the corresponding other side of said doorway, and a plurality of vertically spaced-apart second keepers carried by said body at said other side of said doorway and respectively receiving the outer ends of said second arms in their active positions, said standard and said arms and said keepers being disposed in said doorway inwardly of said door structure and in non-interfering relation with the movements thereof between its open and closed positions, whereby said device with said standard in its active position and with said arms in their active positions protects said door structure in its closed position against damage by shifting cargo in said lading compartment.

10. In a shipping container including a body defining a lading compartment and a doorway thereinto, and door structure carried by said body and selectively movable between open and closed positions with respect to said doorway; a protective device for said door structure comprising a standard, a laterally extending guide member carried by said body and disposed at the top of said doorway, means mounting the upper end of said standard upon said guide member for lateral movements between active and inactive positions with respect to said doorway, said standard in its active position being disposed in an upstanding position and located substantially centrally in said doorway, said standard in its inactive position being disposed in an upstanding position and located at one side of said doorway in non-interfering relation with ready placement and removal of cargo through said doorway and with respect to said lading compartment, means for selectively securing to said body said standard in its active position, a plurality of vertically spaced-apart first arms respectively pivotally connected at the inner ends thereof to said standard and selectively movable when said standard is in its active position between substantially vertical inactive positions folded adjacent to said standard and substantially horizontal active positions outstanding from one side of said standard and projecting across the corresponding one side of said doorway, a plurality of vertically spaced-apart first keepers carried by said body at said one side of said doorway and respectively receiving the outer ends of said first arms in their active positions, a plurality of vertically spaced-apart second arms respectively pivotally connected at the inner ends thereof to said standard and selectively movable when said standard is in its active position between substantially vertical inactive positions folded adjacent to said standard and substantially horizontal active positions outstanding from the other side of said standard and projecting across the corresponding other side of said doorway, and a plurality of vertically spaced-apart second keepers carried by said body at said other side of said doorway and respectively receiving the outer ends of said second ones in their active positions, said standard and said arms and said keepers being disposed in said doorway inwardly of said door structure and in non-interfering relation with the movements thereof between its open and closed position, whereby said device with said standard in its active position and with said arms in their active positions protects said door structure in its closed position against damage by shifting cargo in said lading compartment.

11. The protective device set forth in claim 10, wherein said means for mounting the upper end of said standard upon said guide member for lateral movements essentially comprises a guide element carried by the upper end of said standard and riding upon said guide member, said guide element including a threaded part accommodating adjustment of the vertical position of said standard with respect to said guide member in response to rotation of said standard about its longitudinal axis.

12. The protective device set forth in claim 10, wherein said means for selectively securing to the bottom of said doorway the lower end of said standard in its active position essentially comprises a latch member slidably mounted upon the lower end of said standard and cooperating with a latch keeper provided in the bottom of said doorway.

13. A road semi-trailer comprising a body defining a lading compartment and a rear doorway thereinto, rear door structure carried by said body and selectively movable between open and closed positions with respect to said rear doorway, and a protective device for said rear door structure; said device comprising a standard, means for removably securing said standard to said body in an upstanding substantially central position in said rear doorway, a plurality of vertically spaced-apart first arms respectively pivotally connected at the inner ends thereof to said standard and selectively movable between substantially vertical inactive positions folded adjacent to said standard and substantially horizontal active positions outstanding from one side of said standard and projecting across the corresponding one side of said rear doorway, a plurality of vertically spaced-apart first keepers carried by said body at said one side of said rear doorway and respectively receiving the outer ends of said first arms in their active positions, a plurality of vertically spaced-apart second arms respectively pivotally connected at the inner ends thereof to said standard and selectively movable between substantially vertical inactive positions folded adjacent to said standard and substantially horizontal active positions outstanding from the other side of said standard and projecting across the corresponding other side of said rear doorway, and a plurality of vertically spaced-apart second keepers carried by said body at said other side of said rear doorway and respectively receiving the outer ends of said seconds arms in their active positions, said standard and said arms and said keepers being disposed in said rear doorway forwardly of said rear door structure and in non-interfering relation with the movements thereof between its open and closed positions, whereby said device with said arms in their active positions protects said rear door structure in its closed position against damage by shifting cargo in said lading compartment.

14. A road semi-trailer comprising a body defining a lading compartment and a rear doorway thereinto, rear door structure carried by said body and selectively movable between open and closed positions with respect to said rear doorway, and a protective device for said rear door structure; said device comprising a standard, means mounting said standard upon said body for movements between active and inactive positions with respect to said rear doorway, said standard in its active position being disposed in an upstanding position and located substantially centrally in said rear doorway, said standard in its inactive position being disposed in an upstanding position and located at one side of said rear doorway in non-interfering relation with ready placement and removal of cargo through said rear doorway and with respect to said lading compartment, means for selectively securing to said body said standard in its active position, a plurality of vertically spaced-apart first arms respectively pivotally connected at the inner ends thereof to said standard and selectively movable when said standard is in its active position between substantially vertical inactive positions folded adjacent to said standard and substantially horizontal active positions outstanding from one side of said standard and projecting across the corresponding one side of said rear doorway, a plurality of vertically spaced-apart first keepers carried by said body at said one side of said rear doorway and respectively receiving the outer ends of said first arms in their active positions, a plurality of vertically spaced-apart second arms respectively piv-

otally connected at the inner ends thereof to said standard and selectively movable when said standard is in its active position between substantially vertical inactive positions folded adjacent to said standard and substantially horizontal active positions outstanding from the other side of said standard and projecting across the corresponding other side of said rear doorway, and a plurality of vertically spaced-apart second keepers carried by said body at said other side of said rear doorway and respectively receiving the outer ends of said second arms in

their active positions, said standard and said arms and said keepers being disposed in said rear doorway forwardly of said rear door structure and in non-interfering relation with the movements thereof between its open and closed positions, whereby said device with said standard in its active position and with said arms in their active positions protects said rear door structure in its closed position against damage by shifting cargo in said lading compartment.

No references cited.