Nov. 8, 1966 R. M. LAMPORT ETAL 3,283,729

LADING SEPARATING BULKHEADS FOR RAILWAY BOXCARS

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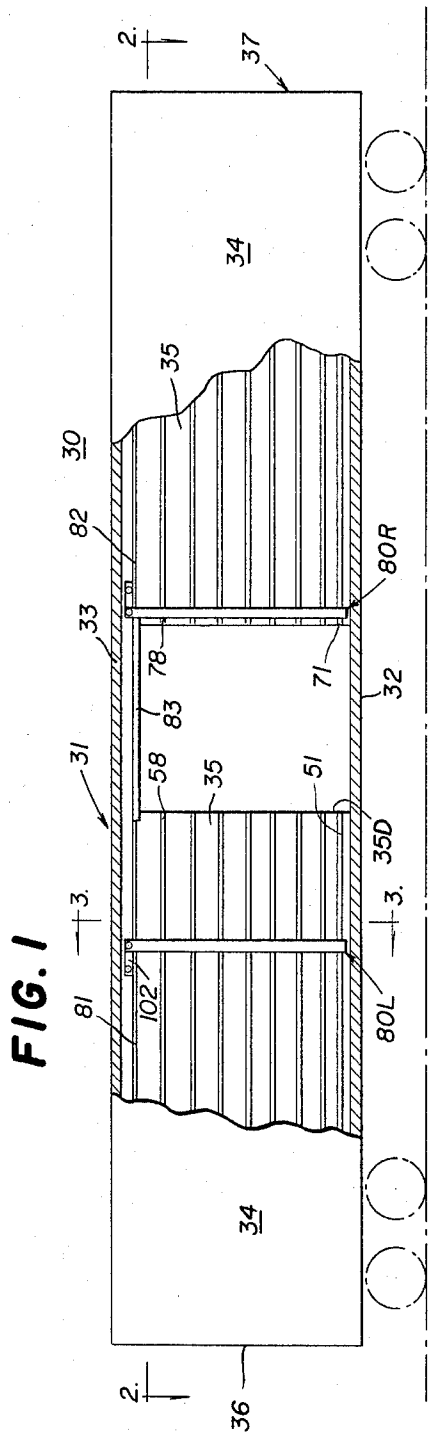


FIG. 1

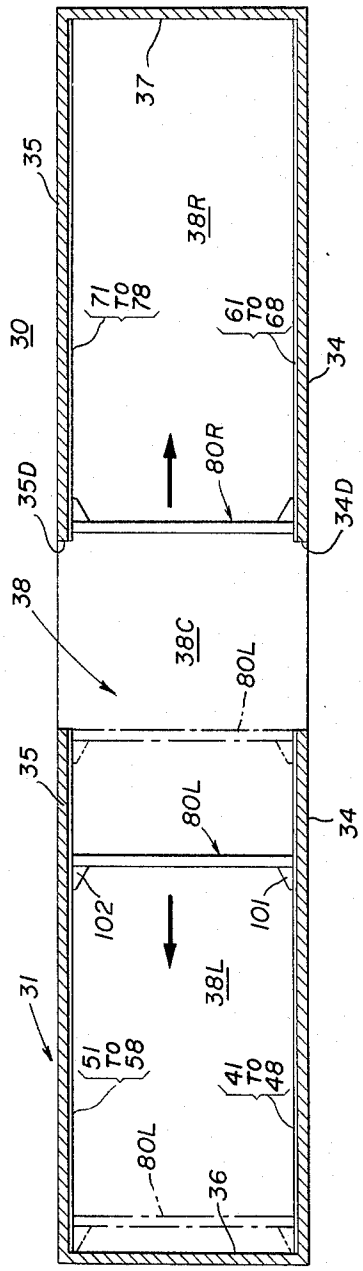


FIG. 2

INVENTORS
RICHARD M. LAMPORT
ROBERT L. HASSENAUER

BY Brumley, Baird Clayton, Miller & Vogel,

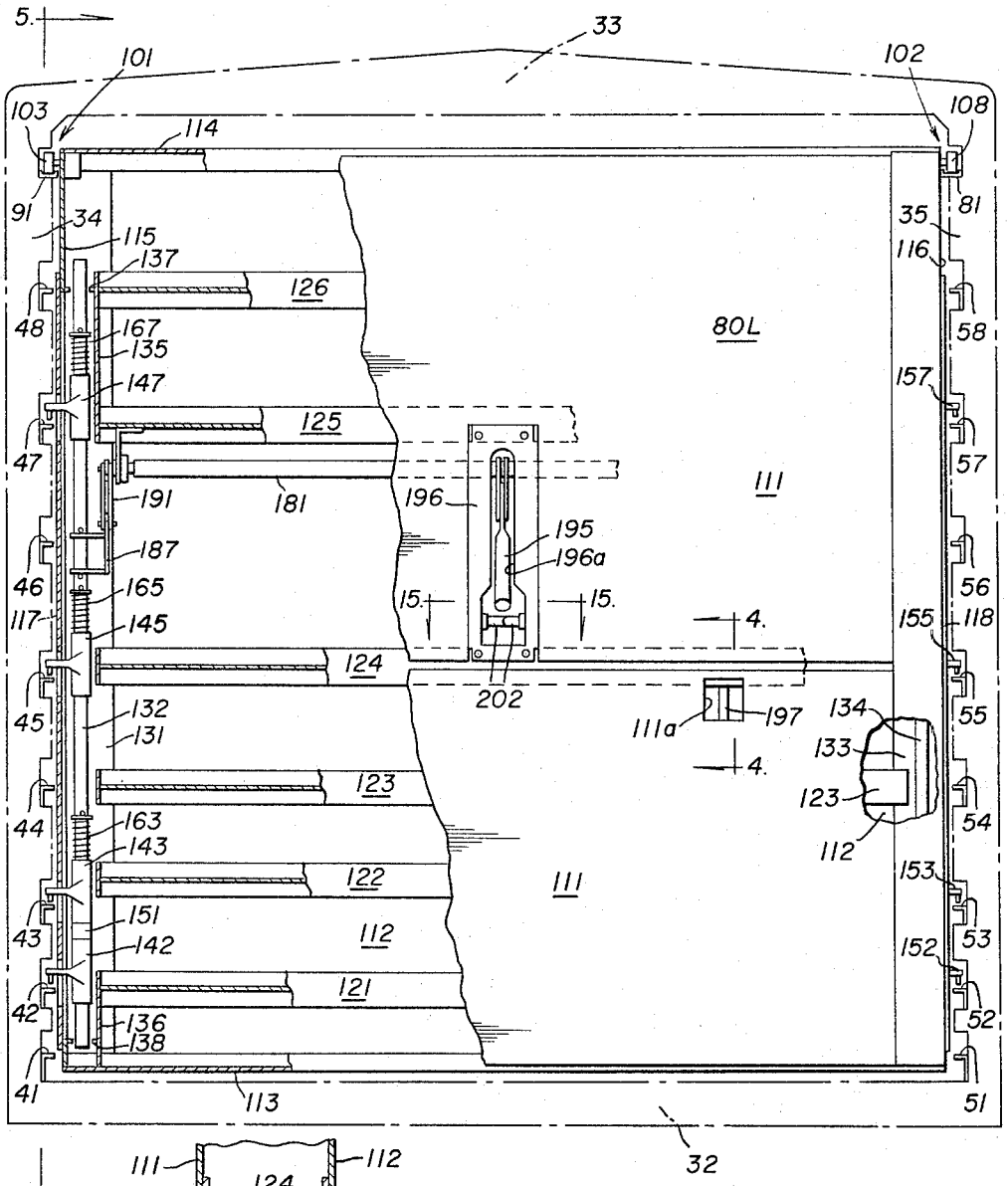
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LADING SEPARATING BULKHEADS FOR RAILWAY BOXCARS

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FIG. 3



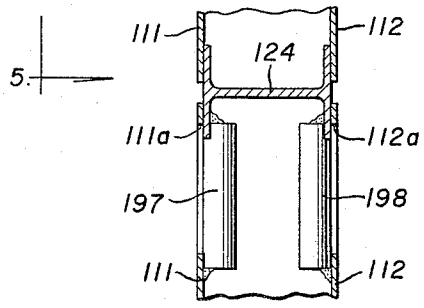


FIG. 4

INVENTORS
RICHARD M. LAMPORT
ROBERT L. HASSENAUER
BY
Brumley, Baird & Clayton, Miller & Vogel,
ATTYS.

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LADING SEPARATING BULKHEADS FOR RAILWAY BOXCARS

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FIG. 5

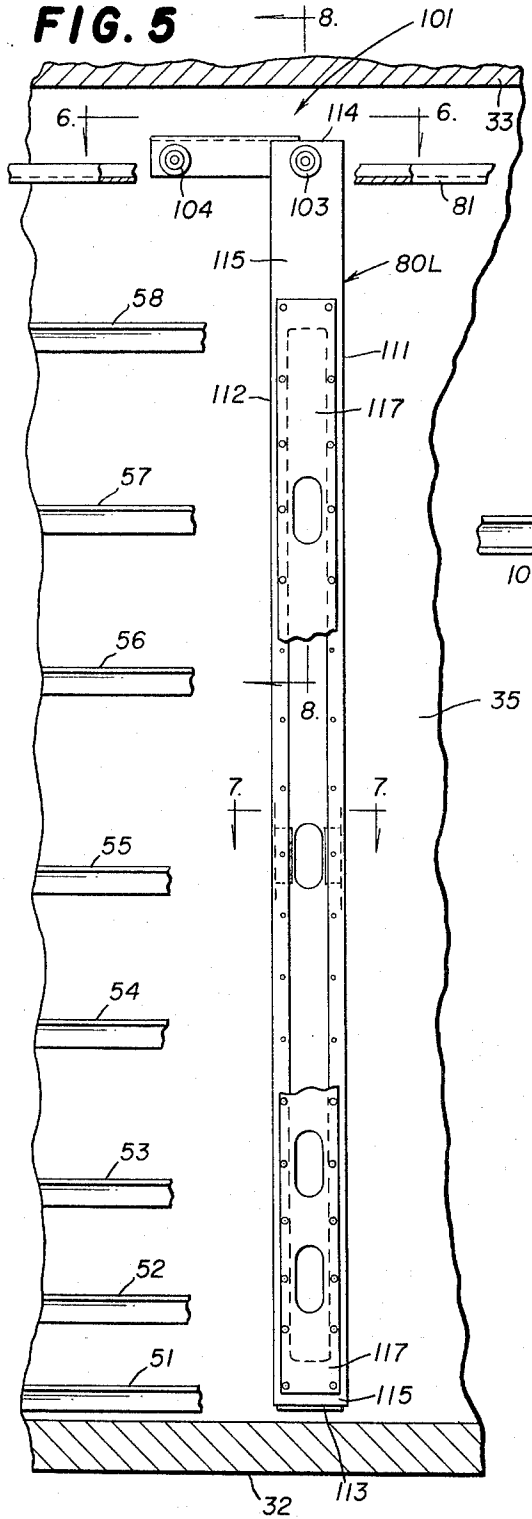


FIG. 6

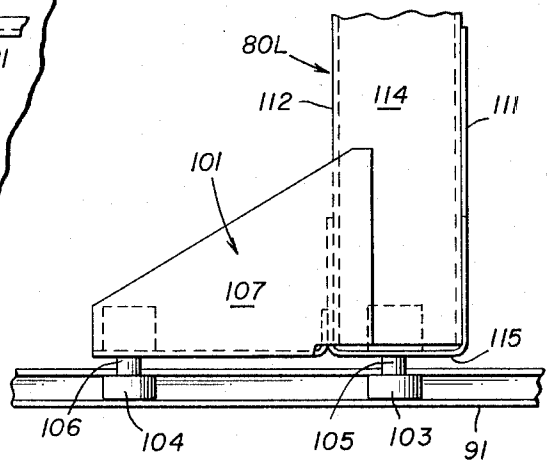
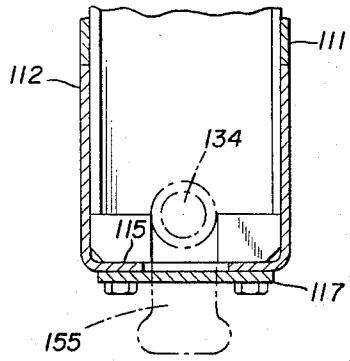


FIG. 7



INVENTORS
RICHARD M. LAMPORT
ROBERT L. HASSENAUER

BY Brumbley, Baird, Clayton, Miller & Vogel,

ATTYS.

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LADING SEPARATING BULKHEADS FOR RAILWAY BOXCARS

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FIG. 8

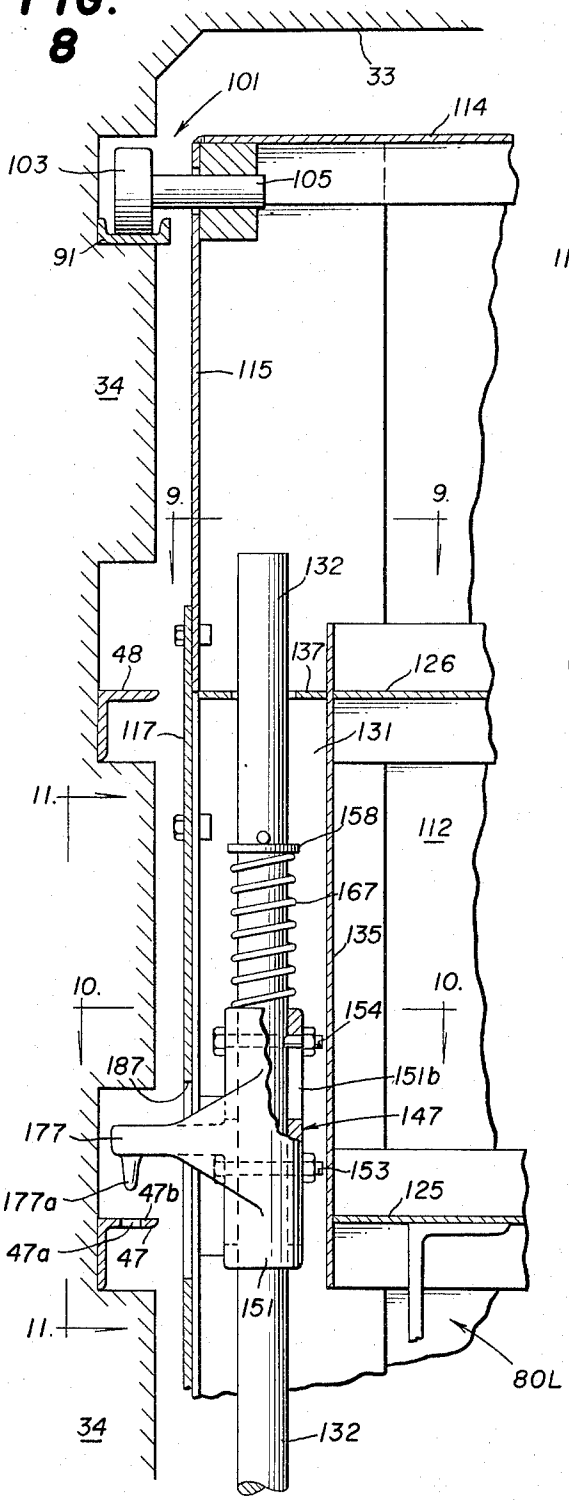


FIG. 9

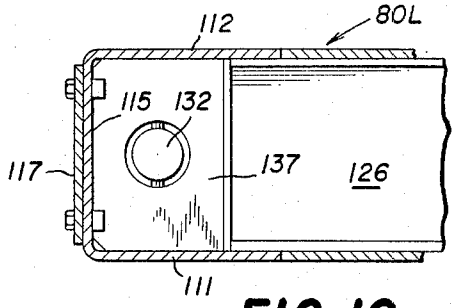


FIG. 10

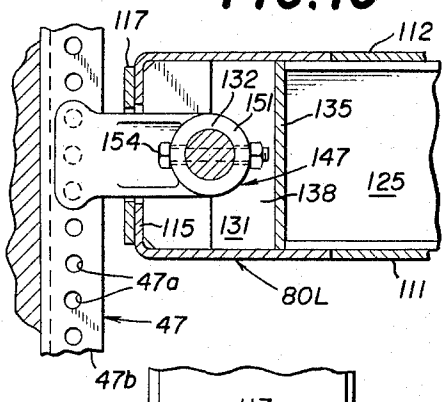
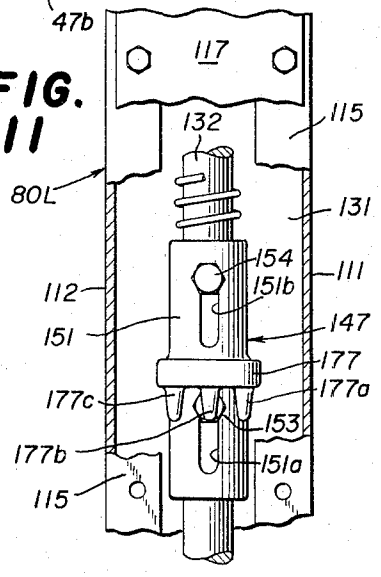


FIG. 11



INVENTORS
RICHARD M. LAMPORT
ROBERT L. HASSENAUER

BY Pressley, Baird, Clayton, Miller & Vogel,

ATTYS.

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LADING SEPARATING BULKHEADS FOR RAILWAY BOXCARS

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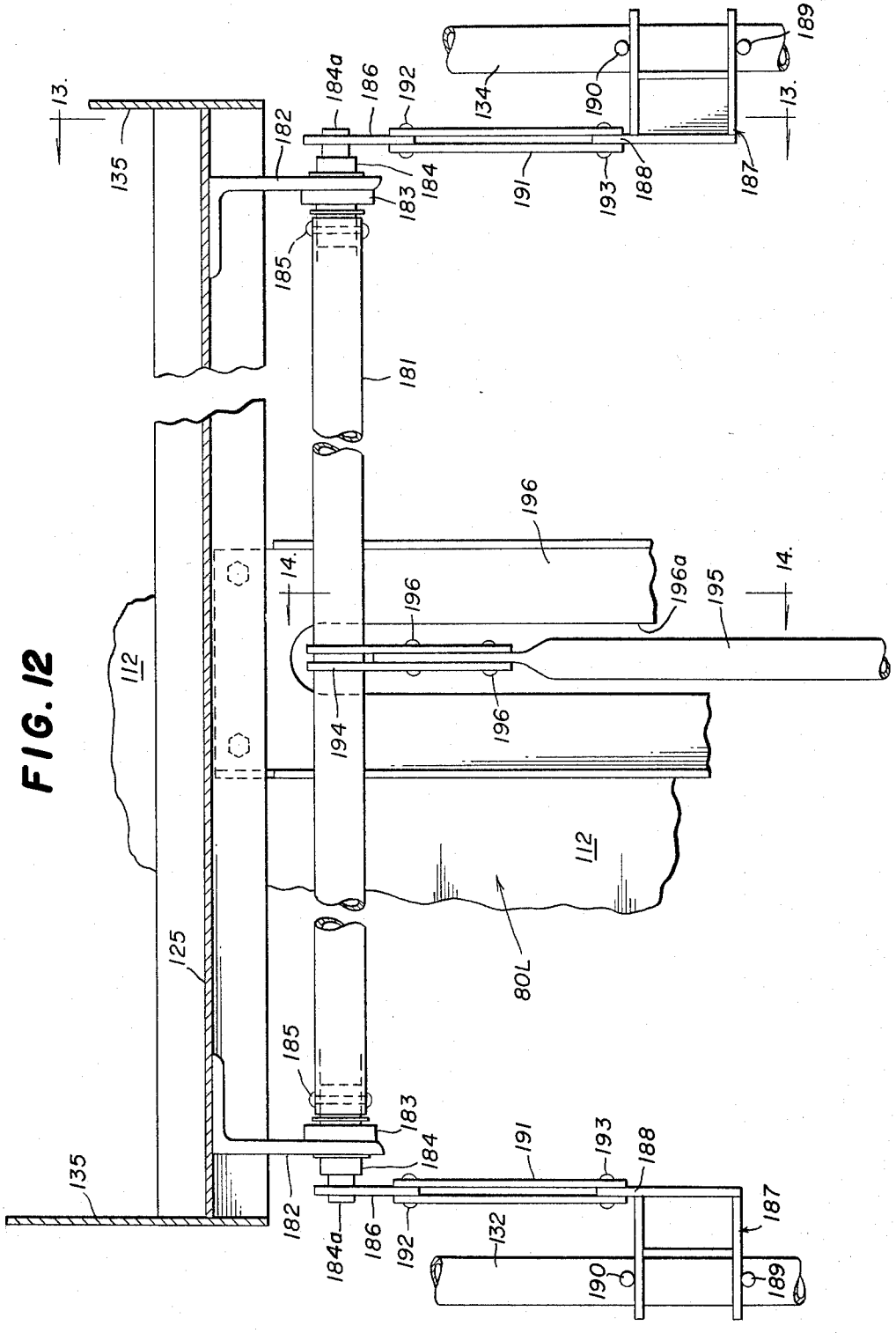


FIG. 12

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LADING SEPARATING BULKHEADS FOR RAILWAY BOXCARS

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FIG. 13

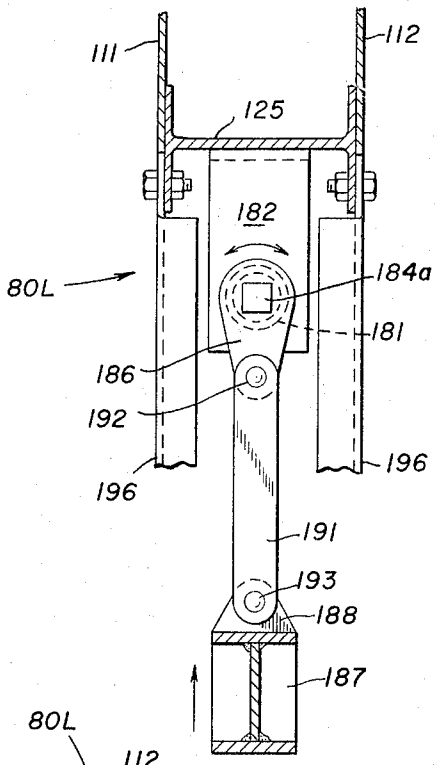


FIG. 14

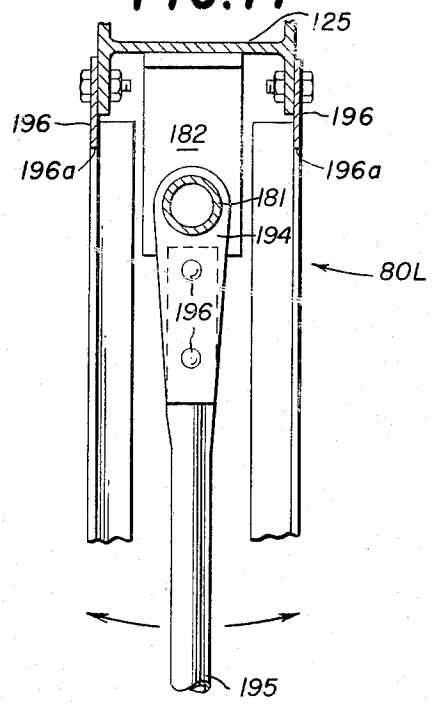


FIG. 15

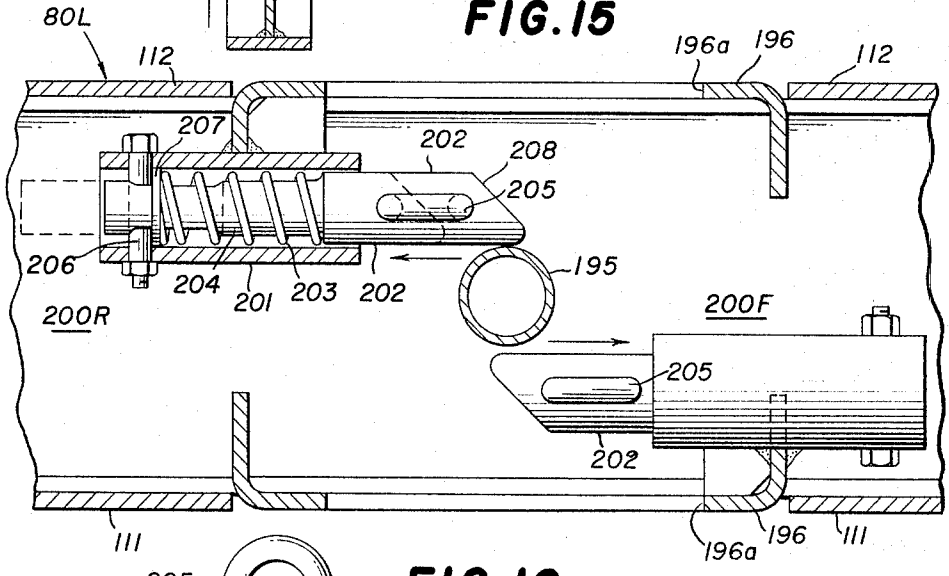
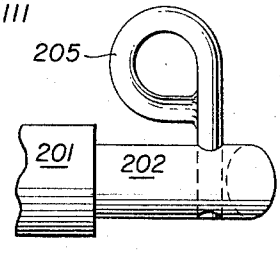


FIG. 16



INVENTORS
RICHARD M. LAMPORT
ROBERT L. HASSENAUER

BY Brumley, Baird, Clayton, Miller & Doyle,

ATTYS.

Nov. 8, 1966 R. M. LAMPORT ETAL 3,283,729

LADING SEPARATING BULKHEADS FOR RAILWAY BOXCARS

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FIG. 17

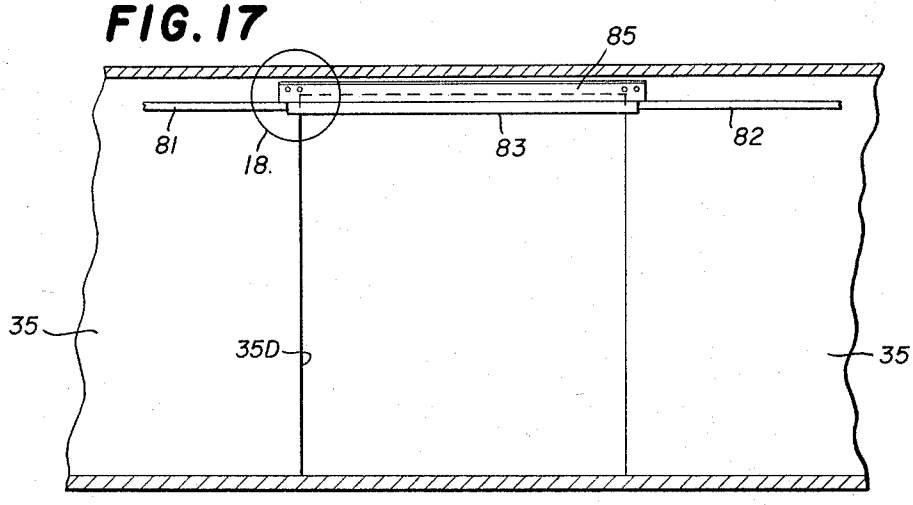


FIG. 18

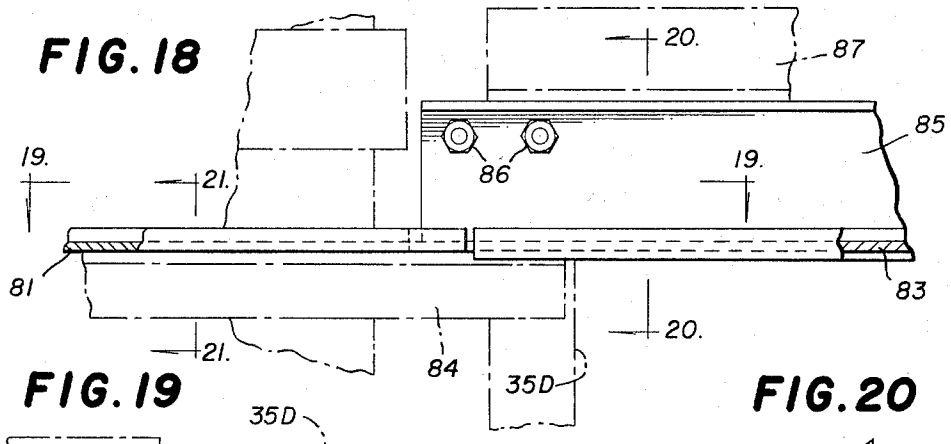


FIG. 19

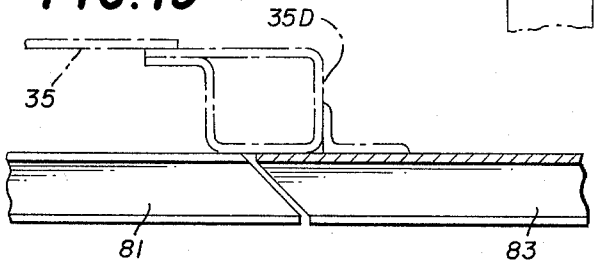
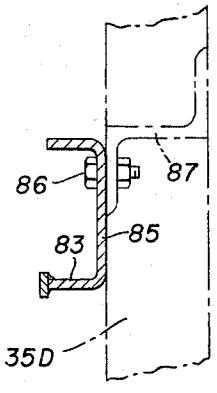


FIG. 20



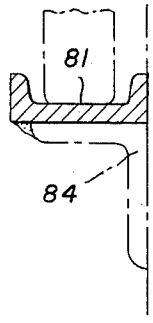


FIG. 21

INVENTORS
RICHARD M. LAMPORT
ROBERT L. HASSENAUER

BY Pravley, Baird, Clayton, Miller & Vogel,

ATTYS.

United States Patent Office

3,283,729

Patented Nov. 8, 1966

3,283,729

LADING SEPARATING BULKHEADS FOR RAILWAY BOXCARS

Richard M. Lamport, Lake Forest, and Robert L. Hassenauer, Chicago Heights, Ill., assignors to General American Transportation Corporation, Chicago, Ill., a corporation of New York

Filed Mar. 10, 1964, Ser. No. 350,886
10 Claims. (Cl. 105—376)

The present invention relates to railway boxcars or other box-like containers for transporting freight incorporating bulkheads for separating the contained lading into a plurality of compartments therein, so as to minimize shifting of the lading during transit of the boxcars and thus to minimize lading dmage by such shifting.

It is a general object of the invention to provide an improved bulkhead that is adapted to be directly incorporated into a railway boxcar of a conventional tpye to provide a dunnage system so as to minimize lading damage in the transit of the boxcar.

Another object of the invention is to provide a bulkhead of the character noted, that includes hanger mechanism for supporting the bulkhead in an upstanding position in the boxcar extending laterally substantially between the upstanding side walls of the boxcar and for mounting the bulkhead for movements into longitudinally spaced-apart positions in the boxcar, and that incorporates improved locking mechanism, wherein the locking mechanism in its lock position locks the sides of the bulkhead to the side walls of the boxcar to preserve the corresponding longitudinal position of the bulkhead in the boxcar, and wherein the locking mechanism in its unlock position unlocks the sides of the bulkhead from the side walls of the boxcar to accommodate the longitudinal movements of the bulkhead in the boxcar.

A further object of the invention is to provide a dunnage system of the character described, wherein the locking mechanism carried by the bulkhead cooperates with perforated belt rails arranged in two groups and respectively carried by the opposite side walls of the boxcar in a conventional manner.

A still further object of the invention is to provide a bulkhead of the character described that is of hollow construction including substantially rectangular front and rear walls disposed in longitudinally spaced-apart relation and a substantially rectangular boundary frame arranged between the front and rear walls and joined thereto adjacent to the perimeters thereof, and incorporating improved locking mechanism including a manually operable handle mounted within the bulkhead and accessible from the opposite sides thereof through aligned holes respectively formed in the front and rear walls, and wherein the handle is selectively operable between a lock position and either one of two unlock positions, the handle in its lock position being disposed within the bulkhead, the handle in one of its unlock positions projecting forwardly through the adjacent hole formed in the front wall and the handle in the other of its unlock positions projecting rearwardly through the adjacent hole formed in the rear wall.

Further features of the invention pertain to the particular arrangement of the elements of the dunnage system and of the bulkhead forming a part thereof, 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, partly broken away, of a railway boxcar carrying two bulkheads and

providing a dunnage system embodying the present invention;

FIG. 2 is a horizontal sectional view of the railway boxcar, and a plan view of the two carried bulkheads, and illustrating the adjustment of the bulkheads in the boxcar, this view being taken in the direction of the arrows along the line **2—2** in FIG. 1;

FIG. 3 is an enlarged front view, partly broken away, of one of the bulkheads, this view being taken in the direction of the arrows along the line **3—3** in FIG. 1;

FIG. 4 is a greatly enlarged fragmentary vertical sectional view of a detail of the bulkhead, this view being taken in the direction of the arrows along the line **4—4** in FIG. 3;

FIG. 5 is a further enlarged end elevational view of the bulkhead, this view being taken in the direction of the arrows along the line **5—5** in FIG. 3;

FIG. 6 is a greatly enlarged framentary top view of one of the hangers carried by the bulkhead, this view being taken in the direction of the arrows along the line **6—6** in FIG. 5;

FIG. 7 is a greatly enlarged fragmentary horizontal sectional view of another detail of the bulkhead, this view being taken in the direction of the arrows along the line **7—7** in FIG. 5;

FIG. 8 is a greatly enlarged fragmentary vertical sectional view of one side of the bulkhead, this view being taken in the direction of the arrows along the line **8—8** in FIG. 5;

FIG. 9 is a greatly enlarged fragmentary horizontal sectional view of another detail of the bulkhead, this view being taken in the direction of the arrows along the line **9—9** in FIG. 8;

FIG. 10 is a greatly enlarged fragmentary horizontal sectional view of another detail of the bulkhead, this view being taken in the direction of the arrows along the line **10—10** in FIG. 8;

FIG. 11 is a greatly enlarged side view, partly broken away, of the bulkhead, this view being taken in the direction of the arrows along the line **11—11** in FIG. 8;

FIG. 12 is a greatly enlarged fragmentary front view, partly broken away, of the upper central portion of the bulkhead, as shown in FIG. 3, and illustrating certain details of the locking mechanism incorporated therein;

FIG. 13 is a greatly enlarged fragmentary vertical sectional view of a detail of the locking mechanism, this view being taken in the direction of the arrows along line **13—13** in FIG. 12;

FIG. 14 is a greatly enlarged fragmentary vertical sectional view of another detail of the locking mechanism, this view being taken in the direction of the arrows along the line **14—14** in FIG. 12;

FIG. 15 is a greatly enlarged fragmentary horizontal sectional view of the operating handle for the locking mechanism and of the latching mechanism that is operatively associated with the operating handle, this view being taken in the direction of the arrows along the line **15—15** in FIG. 3;

FIG. 16 is a greatly enlarged fragmentary side view of a detail of the latching mechanism as shown in FIG. 15;

FIG. 17 is a longitudinal vertical sectional view of the central portion of the railway boxcar, as shown in FIG. 1, and illustrating the central section of one of the track rails carried by the corresponding one upstanding side wall of the boxcar;

FIG. 18 is a greatly enlarged view of a detail of the one central track rail section, as developed in the circle designated **18** in FIG. 17;

FIG. 19 is a greatly enlarged fragmentary horizontal sectional view of the track rail detail, this view being

taken in the direction of the arrows along the line 19—19 in FIG. 18;

FIG. 20 is a greatly enlarged fragmentary vertical sectional view of the track rail detail, this view being taken in the direction of the arrows along the line 20—20 in FIG. 18; and

FIG. 21 is another greatly enlarged fragmentary vertical sectional view of the track rail detail, this view being taken in the direction of the arrows along the line 21—21 in FIG. 18.

Referring now to FIGS. 1 to 3, inclusive, 5 and 8 of the drawings, there is illustrated a railway boxcar 30 comprising a body 31 of box-like configuration and constituting a container for transporting or shipping freight, which freight or lading may be of any suitable form. The body 31 is of elongated form including a floor 32, a roof 33, a pair of longitudinally extending and laterally spaced-apart upstanding side walls 34 and 35, and a pair of laterally extending and longitudinally spaced-apart upstanding end walls 36 and 37; which walls cooperate to define a lading chamber 38, including a left-hand section 38L, a right-hand section 38R and an intermediate or central section 38C. The side walls 34 and 35 have aligned upstanding doorways 34D and 35D respectively formed in the central portions thereof; which two doorways 34D and 35D are respectively provided with two doors, not shown, for the usual purpose of selectively opening and closing the same. The doorways 34D and 35D respectively communicate with the opposite sides of the central chamber section 38C for the usual purpose of accommodating selective loading and unloading of the lading with respect to the lading chamber 38; and the chamber sections 38L and 38R are in direct open communication with the chamber section 38C.

The body 31 comprises equipment forming a part of the dunnage system that is sold by Evans Products Company as "DF"; which equipment includes a first group of longitudinally extending and vertically spaced-apart perforated belt rails 41 to 48, inclusive, carried by the left-hand section of the side wall 34, a second group of longitudinally extending and vertically spaced-apart perforated belt rails 51 to 58, inclusive, carried by the left-hand section of the side wall 35, a third group of longitudinally extending and vertically spaced-apart perforated belt rails 61 to 68, inclusive, carried by the right-hand section of the side wall 34, and a fourth group of longitudinally extending and vertically spaced-apart perforated belt rails 71 to 78, inclusive, carried by the right-hand section of the side wall 35. The belt rails 41, 51, 61 and 71 are arranged in a first substantially horizontal plane spaced somewhat above the adjacent floor 32; the belt rails 42, 52, 62 and 72 are arranged in a second substantially horizontal plane spaced above the adjacent first plane; etc.; and the belt rails 48, 58, 68 and 78 are arranged in an eighth substantially horizontal plane spaced above the adjacent seventh plane. Also, the eighth horizontal plane is arranged toward the tops of the side walls 34 and 35, but well below the roof 33. Thus: the belt rails 41 and 51 comprise a coordinate substantially parallel laterally spaced-apart and aligned pair; the belt rails 61 and 71 comprise a coordinate substantially parallel laterally spaced-apart and aligned pair; and the same relationship maintains with respect to the belt rails 42 and 52, 62 and 72, etc. Also: the belt rails 41 and 61 are arranged in longitudinal alignment on opposite sides of the adjacent doorway 34D; the belt rails 51 and 71 are arranged in longitudinal alignment on opposite sides of the adjacent doorway 35D; and the same relationship maintains with respect to the belt rails 42 and 62, 52 and 72, etc.

In accordance with the present invention, a dunnage system is provided that comprises the body 31 of the construction described above and one or more bulk-heads of the construction described hereinafter; and in the illustrated embodiment of the system, two such bulkheads 80L and 80R are provided that the respectively arranged in the chamber sections 38L and 38R; which bulkheads 80L and 80R are identical and are supported by a track structure carried by the side walls 34 and 35 adjacent to the tops thereof. More particularly, the side wall 35 carries adjacent to the top wall thereof, as shown in FIGS. 1, 3, 5 and 17 to 21, inclusive, three longitudinally extending and aligned track sections 81, 82 and 83. Similarly, the side wall 34 carries adjacent to the top thereof three longitudinally extending and aligned track sections 91, etc., only the track section 91 being shown in FIGS. 3, 5 and 8. The six track sections mentioned are arranged in a substantially horizontal ninth plane disposed below the roof 33 and above the eighth plane of the belt rails 48, 58, 68 and 78. The track sections 81, 91 are arranged in coordinate substantially parallel laterally spaced-apart and aligned relation; and the other corresponding track sections mentioned are arranged in the same relationship.

The track arrangement will be understood from the showing in FIGS. 17 to 21, inclusive; wherein it is illustrated that the track sections 81 and 82 are secured in fixed relation to the respective left-hand and right-hand sections of the side wall 35 disposed on opposite sides of the doorway 35D, while the track section 83 is secured in removable relation to the central section of the side wall 35 disposed above the doorway 35D; whereby the track section 83 bridges together the inner ends of the track sections 81 and 82 to accommodate movements of the bulkheads 80L and 80R into the central chamber section 38C. More particularly, the track section 81 is rigidly secured to a longitudinally extending support, indicated at 84, that, in turn, is rigidly secured to the adjacent left-hand section of the side wall 35. The track section 82 is rigidly secured to a longitudinally extending support, not shown, that, in turn, is rigidly secured to the adjacent right-hand section of the side wall 35. On the other hand, the track section 83 is defined by the lower flange of a beam 85 that extends longitudinally over the top of the doorway 35D, that in turn, is detachably secured by bolts 86 to a doorway framing element, indicated at 87. Each of the track sections 81, 82 and 83 presents a trough-like structure to the wheels of the hangers carried by the bulkheads 80L and 80R, as explained more fully below, so as to perform a combination tracking and guiding function.

Referring now to FIGS. 1, 2, 3, 5, 6 and 8, the opposite top sides of the bulkhead 80L respectively carry a pair of hanger structures 101 and 102 that respectively cooperate with the track sections 91 and 81 so as to support the bulkhead 80L in upstanding position in the chamber section 38L and so as to mount the bulkhead 80L for longitudinal movements along the rail sections 91 and 81 toward and away from the adjacent end wall 36. The hanger structures 101 and 102 are identical; and the hanger structure 101 comprises, as best shown in FIGS. 5 and 6, a pair of longitudinally spaced-apart rollers 103 and 104 that ride in the adjacent track section 91. Specifically, the front roller 103 is mounted upon a laterally extending trunnion 105 carried by the adjacent end of the bulkhead 80L and the rear roller 104 is mounted upon a laterally extending trunnion 106 carried by a longitudinally projecting arm 107 that is, in turn, secured to the top of the adjacent end of the bulkhead 80L. In FIG. 3, the front roller of the hanger structure 102 is indicated at 108; which roller 108 rides in the adjacent track section 81. The arrangement of the four rollers mentioned carried by the two hanger structures 101 and 102 lends stability to the bulkhead 80L incident to the longitudinal rolling movements thereof in upstanding position along the track sections 81 and 91.

Referring now to FIGS. 3 to 15, inclusive, it will be understood that the bulkhead 80L is of hollow block-like configuration, including two substantially parallel longitudinally spaced-apart walls 111 and 112 of substantially rectangular form, respectively termed front and rear walls, and a substantially rectangular boundary wall joining together the perimeters of the front and rear walls 111 and

112. The boundary wall mentioned includes a bottom wall 113 disposed adjacent to and above the floor 32, a top wall 114 disposed adjacent to and below the roof 33, and a pair of side walls 115 and 116 respectively disposed adjacent to and laterally inwardly of the body side walls 34 and 35. The side wall 115 has an elongated vertically disposed slot in the central portion thereof that is closed by a carried upstanding cover plate 117; and the side wall 116 is of like construction, so that it carries a corresponding cover plate 118. The bulkhead 80L is reinforced by a plurality of laterally extending and vertically spaced-apart I-beams 121 to 126, inclusive, as best shown in FIG. 3. In the arrangement, the opposite heads of the I-beams 121, etc., respectively engage the inner surface of the front and rear walls 111 and 112 and are suitably rigidly secured thereto. At this point, it is noted that the I-beams 124 and 125 are respectively disposed somewhat below and somewhat above the horizontal center line of the bulkhead 80L, as best shown in FIG. 3; whereby the four I-beams 121, 122, 123 and 124 are arranged in the lower portion of the bulkhead 80L where the impact forces are more severe and the two I-beams 125 and 126 are arranged in the upper portion of the bulkhead 80L where the impact forces are less severe.

The ends of the I-beams 125, etc., directed toward the side wall 115 terminate short thereof to define an upstanding pocket 131 laterally inwardly thereof, in which there is arranged an upstanding locking bar 132; and, similarly, the ends of the I-beams 125, etc., directed toward the side wall 116 terminate short thereof to define an upstanding pocket 133 laterally inwardly thereof, in which there is arranged an upstanding locking bar 134. The adjacent opposite ends of the I-beams 125 and 126 are secured together by a pair of upstanding plates 135; and the opposite ends of the I-beam 121 are secured to the adjacent portions of the bottom wall 113 by a pair of upstanding plates 136. The top end of the pocket 131 is closed by a guide plate 137 secured to the plate 135 and to the adjacent portion of the side wall 115; and similarly, the bottom end of the pocket 131 is closed by a guide plate 138 secured to the plate 136 and to the adjacent portion of the side wall 115; and the locking bar 132 is mounted for vertical reciprocating movements in aligned openings respectively formed in the plates 137 and 138. Of course, the mounting arrangement for the locking bar 134 in the pocket 133 is the same as that described above for the locking bar 132.

As best shown in FIGS. 3, 5, 7, 8, 9, 10 and 11, the locking bar 132 carries four vertically spaced-apart locking dogs 142, 143, 145 and 147 that respectively cooperate with the adjacent belt rails 42, 43, 45 and 47; and likewise, the locking bar 134 carries four vertically spaced-apart locking dogs 152, 153, 155 and 157 that respectively cooperate with the adjacent belt rails 52, 53, 55 and 57. At this point, it is mentioned that the bulkhead 80L does not actively cooperate with the belt rails 41, 44, 46 and 48 or with the belt rails 51, 54, 56 and 58. However, since the belt rails 41, etc., and 51, etc., are already installed in the body 31, and do not interfere with the bulkhead 80L, they are retained in their installed positions, as best illustrated in FIG. 3. The locking dogs 142 and 143 are mounted adjacent to each other upon the locking bar 132 with a loose separating collar 151 therebetween and also carried by the locking bar 132. The locking dogs 142, etc., are identical; and as best shown in FIGS. 8 and 11, the locking dog 147 comprises a barrel or sleeve 151 that is slidably mounted upon the locking bar 132 for limited relative vertical movements with respect thereto. The limited vertical movements mentioned are obtained by the cooperation of two vertically spaced-apart bolts 153 and 154 carried by the locking bar 132 and respectively projecting through aligned pairs of vertically disposed slots 151*a* and 151*b* formed in the barrel 151. Also, the locking dog 147 is biased downwardly by a cooperating coil spring 167 acting between the top of the barrel 151 and a washer 158 carried by the locking bar 132, the coil spring 167 being disposed in surrounding relation with the section of the locking bar 132 disposed immediately above the barrel 151. The coil spring for biasing downwardly the locking dog 145 is illustrated at 165; and the coil spring for biasing downwardly both of the locking dogs 143 and 142 is illustrated at 143, all as shown in FIG. 3. The mounting arrangement of the locking dogs 152, 153, 155 and 157 upon the locking bar 134 is the same as that described above relative to the locking dogs 142, 143, 145 and 147 upon the locking bar 132.

As previously noted, the locking dogs 142, etc., 152, etc., are identical; and as shown in FIGS. 8, 10 and 11, the locking dog 147 includes a laterally outwardly directed arm 177 that projects from the barrel 151 through a cooperating opening 187 formed in the adjacent portion of the cover plate 117; and the extreme outer end of the arm 177 carries three longitudinally spaced-apart and downwardly projecting locking pins 177*a*, 177*b* and 177*c*. The longitudinal spacing between adjacent ones of the locking pins 177*a*, 177*b* and 177*c* corresponds to the longitudinal spacing between adjacent ones of the longitudinally spaced-apart perforations 47*a* provided in the laterally inwardly directed flange 47*b* of the cooperating belt rail 47, as best shown in FIG. 10. Moreover, each of the locking pins 177*a*, etc., is downwardly tapered and has a diameter such that the same may be inserted into any one of the perforations 47*a* in the flange 47*b* of the cooperating belt rail 47, and then thrust downwardly into final locking position with respect thereto.

In view of the foregoing, it will be understood that when the locking bars 132 and 134 are moved into their upper or unlock positions, all of the locking dogs 142, etc., 152, etc., are lifted into their upper or unlock positions with respect to the cooperating belt rails 42, etc., 52, etc.; and specifically, for example, the locking pins 177*a*, 177*b* and 177*c* are withdrawn from three adjacent ones of the perforations 47*a* provided in the flange 47*b* of the cooperating belt rail 47. Thus, the opposite sides of the bulkhead 80L are unlocked from the four belt rails 42, 43, 45 and 47 carried by the side wall 34 and from the four belt rails 52, 53, 55 and 57 carried by the side wall 35. Accordingly, the bulkhead 80L may be moved longitudinally in the chamber section 38L into any desired adjusted longitudinal position. On the other hand, when the locking bars 132 and 134 are moved into their lower or lock positions all of the locking dogs 142, etc., 152, etc., are pushed downwardly into their lower or lock positions with respect to the cooperating belt rails 42, etc., 52, etc.; and specifically, for example, the locking pins 177*a*, 177*b* and 177*c* are respectively thrust into three adjacent ones of the perforations 47*a* provided in the flange 47*b* of the cooperating belt rail 47. Thus, the opposite sides of the bulkhead 80L are locked to the four belt rails 42, 43, 45 and 47 carried by the side wall 34 and to the four belt rails 52, 53, 55 and 57 carried by the side wall 35. Accordingly, the adjusted longitudinal position of the bulkhead 80L in the chamber section 38L is preserved.

In the locking arrangement, the lost-motion connections between the locking bar 132 and the locking dogs 142, etc., and between the locking bar 134 and the locking dogs 152, etc., insures operation of the locking bars 132 and 134, completely into their lock positions even though one of the locking dogs 142, etc., 152, etc., should hang on the associated belt rail 42, etc., 52, etc., and fail to move completely into its lock position. Also, the provision of a plurality of locking pins on each of the locking dogs 142, etc., 152, etc., positively prevents rattle or slight longitudinal movement of the bulkhead 80L in its locked position to the adjacent belt rails 42, etc., 52, etc.

Turning now to FIGS. 3, 12, 13 and 14, it will be observed that the locking bars 132 and 134 are provided

with a common actuating mechanism including a laterally extending shaft **181** disposed between the front and rear walls **111** and **112** and positioned below the I-beam **125**. More particularly, two depending brackets **182** are rigidly secured to the I-beam **125** adjacent to the opposite ends thereof and respectively carry two bearings **183** that respectively support for rotation two trunnions **184** that are respectively pinned to the opposite ends of the shaft **181**, as indicated at **185**. The extreme outer ends of the trunnions **184** are squared, as indicated at **184***a*, and respectively carry two depending crank arms **186** rigidly secured thereto, the crank arms **186** being positioned laterally inwardly of the respective latching bars **132** and **134** and above the intermediate portions thereof. The intermediate portions of the latching bars **132** and **134** respectively carry two upstanding brackets **187** that are respectively provided with two upstanding arms **188** that are respectively positioned below and in alignment with the crank arms **186**. Each of the brackets **187** is secured to the associated one of the latching bars **132** and **134** by adjacent lower and upper pins **189** and **190**. The extreme lower ends of the crank arms **186** are respectively connected to the extreme upper ends of the bracket arms **188** by two links **191**. Specifically, the upper end of each link **191** is connected to the adjacent lower end of the associated crank arm **186** by a pivot pin **192**; and the lower end of each link **191** is connected to the adjacent upper end of the associated bracket arm **188** by a pivot pin **193**.

The central portion of the shaft **181** has a depending fixture **194** rigidly secured thereto; and a manually operable handle **195** is secured to the fixture **194** by a number of rivets **196**. The central portions of the front and rear walls **111** and **112** have aligned openings therein into which two upstanding plates **196** are rigidly secured in place; and each of the plates **196** has a slot or opening **196***a* therein through which the handle **195** is accessible from the corresponding face of the bulkhead **80L**.

Referring now to FIGS. 12, 13 and 14, the handle **195** has a lock position, wherein it is disposed in a depending position between the front and rear walls **111** and **112**, as shown in FIG. 14. The handle **195** also has a first unlock position, wherein it is pivoted forwardly through the slot **196***a* formed in the plate **196** carried by the front wall **111**, and a second unlock position, wherein it is pivoted rearwardly through the slot **196***a* formed in the plate **196** carried by the rear wall **112**. Thus, a person standing on the floor **32** adjacent to either face of the bulkhead **80L** may readily actuate or pivot the handle **195** between its lock position and the corresponding one of its unlock positions. When the handle **195** is pivoted or rotated into its lock position, the shaft **181** is rotated into its lock position to cause the crank arms **186** to project downwardly into vertical positions, so as to thrust downwardly the links **191**, whereby the brackets **187** thrust downwardly the locking bars **132** and **134** into their lock positions for the lock purpose, as previously described. When the handle **195** is pivoted or rotated into either one of its unlock positions, the shaft **181** is rotated in the corresponding direction into its corresponding unlock position, whereby the crank arms **186** are rotated into the corresponding ones of their unlock positions, so as to lift the links **191**, in order to lift the brackets **187**, with the result that the locking bars **132** and **134** are lifted or moved upwardly into their unlock positions for the unlock purpose, as previously described. Referring to FIG. 13, it will be observed that rotation of the crank arm **186** in either direction out of its vertical depending position lifts the associated link **191** to effect lifting of the connected bracket **187**; whereby the associated locking bar **132** is lifted into its unlock position in exactly the same manner regardless of the direction of rotation of the shaft **181** out of its lock position.

For the purpose of insuring proper leverage upon the operating handle by the person actuating the same, two aligned openings **111***a* and **112***a* are respectively formed in the front and rear walls **111** and **112** of the bulkhead **80L**, as best shown in FIGS. 3 and 4. Within the openings **111***a* and **112***a* there are respectively secured in place two grab-bars **197** and **198**. Thus, a person facing the front wall **111** of the bulkhead **80L** may grasp the handle **195** with his left hand and the grab-bar **197** with his right hand and then brace his foot against the front wall **111**, so as to exert the required force upon the handle **195** to pivot it into its corresponding unlock position. On the other hand, a person facing the rear wall **112** of the bulkhead **80L** may grasp the handle **195** with his right hand and the grab-bar **198** with his left hand and then brace his foot against the rear wall **112**, so as to exert the required force upon the handle **195** to pivot it into its corresponding unlock position.

Referring now to FIGS. 15 and 16, the two plates **196** respectively carried by the front and rear walls **111** and **112** on opposite sides of the operating handle respectively carry two latching mechanisms **200F** and **200R** of identical construction and arrangement. The latching mechanism **200R** comprises a tubular barrel **201** in which a latch plunger **202** is slidably mounted. The plunger **202** is biased into an outwardly thrust or latch position by a cooperating coil spring **203** disposed in surrounding relation with a reduced shank **204** thereof housed within the barrel **201**. The plunger **202** is manually operable into an inwardly thrust or unlatch position by a manual handle **205** of ring-like configuration. The plunger **202** is retained in place within the barrel **201** by a pin **206** that is carried in aligned holes provided in the barrel **201** and that projects through an elongated slot provided in the shank **204**, this slot accommodating movements of the plunger **202** between its latch and unlatch positions. The front end of the spring **203** acts upon the enlarged head of the plunger **202**, and the rear end of the spring **203** acts upon a washer **207** that surrounds the shank **204** and bears against the pin **206**. The extreme front end of the plunger **202** carries a forwardly tapered slide surface **208** that cooperates with the lower end of the handle **195** incident to movement thereof into its lock position.

More particularly, when the handle **195** is swung into its lock position from its unlock position and through the opening **196***a* in the plate **196** carried by the rear wall **112**, the same engages the slide surface **208** carried on the front end of the plunger **202** of the latching mechanism **200R** carried by the plate **196** last mentioned, whereby the plunger **202** slides back into the barrel **201** against the bias of the spring **203**. As the handle **195** moves into its lock position, it disengages the front end of the plunger **202**, whereby the plunger **202** is thrust forwardly into its latch position with respect to the handle **195**, as shown in FIG. 15.

The latching mechanism **200F** carried by the plate **196** that is carried by the front wall **111** cooperates with the handle **195** in an identical manner, when the handle **195** is swung into its lock position from its unlock position and through the opening **196***a* in the plate **196** carried by the front wall **111**.

In view of the foregoing, it will be understood that when the handle **195** occupies its lock position, it is latched therein by the cooperating latching mechanisms **200F** and **200R**; and when the handle **195** is to be operated from its lock position into one of its unlock positions, the corresponding one of the latching mechanisms **200F** and **200R** must first be operated from its latch position into its unlatch position to release the handle **195**. This arrangement positively prevents accidental operation of the handle **195** out of its lock position, thereby to prevent accidental unlocking of the bulkhead **80L**.

As previously noted, the bulkhead **80R** is identical to the bulkhead **80L** described above; and as indicated in FIG. 2, the bulkheads **80L** and **80R** normally occupy positions respectively disposed in the chamber sections **38L** and **38R**. The bulkhead **80L** may be moved to a posi-

tion in close proximity to the end wall **36**, as permitted by the longitudinal projection of the hanger structures **101** and **102**; and of course, the bulkhead **80L** may occupy any adjusted position spaced away from the end wall **36** and located in the chamber section **38L**. Similarly, the bulkhead **80R** may be moved to a position in close proximity to the end wall **37**, as permitted by the longitudinal projection of its hanger structures; and, of course, the bulkhead **80R** may occupy any adjusted position spaced away from the end wall **37** and located in the chamber section **38R**. Of course, the intermediate track sections **83**, etc., accommodate the movements of the bulkheads **80L** and **80R** into the chamber section **38C**. In fact, both of the bulkheads **80L** and **80R** may be moved upon the track system into either one of the chambers **38L** or **38R**, as desired.

In loading the lading chamber **38**, both of the bulkheads may be first moved into the chamber section **38R**. Then the lading may be loaded into the chamber section **38L**; and thereafter, the bulkhead **80L** may be moved into the chamber section **38L** and against the lading therein to retain the same in place. Then the bulkhead **80R** is moved out of the chamber section **38R** and into the chamber section **38C** and backed against the bulkhead **80L**. Then the lading may be loaded into the chamber section **38R**; and thereafter, the bulkhead **80R** may be moved into the chamber section **38R** and against the lading therein to retain the same in place. One of the side doors, not shown, is then closed and lading is loaded in the chamber section **38C** and between the bulkheads **80L** and **80R**, if desired. Finally, the other of the side doors, not shown, is then closed, and both of the side doors mentioned are locked and sealed in the usual manner.

When the lading chamber **38** is thus loaded, the bulkhead **80L** cooperates with the end wall **36** to prevent shifting of the lading contained in the chamber section **38L**, the bulkhead **80R** cooperates with the end wall **37** to prevent shifting of the lading contained in the chamber section **38R** and the bulkheads **80L** and **80R** cooperate with each other to minimize shifting of any lading that may be contained in the chamber section **38C**.

In view of the foregoing, it is apparent that there has been provided a dunnage system that comprises a railway car body of conventional construction and arrangement and two bulkheads of improved construction and arrangement, wherein the two bulkheads are respectively arranged in the opposite end sections of the lading chamber and are readily adjustable for the purpose of blocking in place two bodies of lading respectively disposed in the two end sections of the lading chamber, thereby to prevent shifting thereof during transit of the railways car and the consequent damage to the lading.

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 railway boxcar including a pair of upstanding longitudinally extending side walls disposed in substantially parallel laterally spaced-apart relation, and a pair of longitudinally extending tracks respectively carried by said side walls and disposed in substantially parallel laterally spaced-apart and aligned relation; the combination comprising a generally block-like hollow bulkhead arranged in said boxcar, said bulkhead including substantially rectangular front and rear walls arranged in substantially parallel longitudinally spaced-apart relation and a substantially rectangular boundary wall surrounding and joining the perimeters of said front and rear walls, hanger structure carried by said bulkhead and engaging said tracks for supporting said bulkhead in upstanding position in said boxcar extending laterally substantially between said side walls and for mounting said bulkhead for

movements along said tracks into desired longitudinally spaced-apart positions in said boxcar, whereby opposite first and second sides of said boundary wall are respectively disposed adjacent to first and second of said side walls, a plurality of first locking elements mounted within said bulkhead in vertically spaced-apart relation and projecting laterally outwardly therefrom through a corresponding plurality of openings provided in said first side of said boundary wall and into cooperating relation with said first side wall, each of said first locking elements being mounted for selective vertical movements relative to said bulkhead and between lock and unlock positions with respect to said first side wall, a plurality of second locking elements mounted within said bulkhead in vertically spaced-apart relation and projecting laterally outwardly therefrom through a corresponding plurality of openings provided in said second side of said boundary wall and into cooperating relation with said second side wall, each of said second locking elements being mounted for selective vertical movements relative to said bulkhead and between lock and unlock positions with respect to said second side wall, whereby said locking elements in their lock positions lock the sides of said bulkhead to said side walls to preserve the corresponding longitudinal position of said bulkhead in said boxcar, and whereby said locking elements in their unlock positions unlock the sides of said bulkhead from said side walls to accommodate the longitudinal movements of said bulkhead in said boxcar, first and second upstanding locking bars arranged within said bulkhead respectively adjacent to and laterally inwardly of said first and second sides of said boundary wall, each of said locking bars being mounted for vertical movement relative to said bulkhead and between lock and unlock positions, said first locking bar being commonly operatively connected to said first locking elements, whereby vertical movement of said first locking bar into its lock position moves vertically all of said first locking elements into their lock positions and vertical movement of said first locking bar into its unlock position moves vertically all of said first locking elements into their unlock positions, said second locking bar being commonly operatively connected to said second locking elements, whereby vertical movement of said second locking bar into its lock position moves vertically all of said second locking elements into their lock positions and vertical movement of said second locking bar into its unlock position moves vertically all of said second locking elements into their unlock positions, a manually operable handle pivotally mounted within said bulkhead and accessible from the opposite faces thereof through aligned holes respectively formed in said front and rear walls, said handle having a lock position disposed longitudinally between said front and rear walls and a first unlock position projecting longitudinally forwardly through the adjacent hole formed in said front wall and a second unlock position projecting longitudinally rearwardly through the adjacent hole formed in said rear wall, and mechanism responsive to pivotal movement of said handle into its lock position for moving vertically both of said locking bars into their lock positions and responsive to pivotal movement of said handle into either one of its unlock positions for moving vertically both of said locking bars into their unlock positions.

2. In a railway boxcar including a pair of upstanding longitudinally extending side walls disposed in substantially parallel laterally spaced-apart relation, and a pair of longitudinally extending tracks respectively carried by said side walls and disposed in substantially parallel laterally spaced-apart and aligned relation; the combination comprising a generally block-like hollow bulkhead arranged in said boxcar, said bulkhead including substantially rectangular front and rear walls arranged in substantially parallel longitudinally spaced-apart relation and a substantially rectangular boundary wall surrounding and joining the perimeters of said front and rear walls, hanger

structure carried by said bulkhead and engaging said tracks for supporting said bulkhead in upstanding position in said boxcar extending laterally substantially between said side walls and for mounting said bulkhead for movements along said tracks into desired longitudinally spaced-apart positions in said boxcar, whereby opposite first and second sides of said boundary wall are respectively disposed adjacent to first and second of said side walls, a plurality of first locking elements mounted within said bulkhead in vertically spaced-apart relation and projecting laterally outwardly therefrom through a corresponding plurality of openings provided in said first side of said boundary wall and into cooperating relation with said first side wall, each of said first locking elements being mounted for selective vertical movements relative to said bulkhead and between lock and unlock positions with respect to said first side wall, a plurality of second locking elements mounted within said bulkhead in vertically spaced-apart relation and projecting laterally outwardly therefrom through a corresponding plurality of openings provided in said second side of said boundary wall and into cooperating relation with said second side wall, each of said second locking elements being mounted for selective vertical movements relative to said bulkhead and between lock and unlock positions with respect to said second side wall, whereby said locking elements in their lock positions lock the sides of said bulkhead to said side walls to preserve the corresponding longitudinal position of said bulkhead in said boxcar, and whereby said locking elements in their unlock positions unlock the sides of said bulkhead from said side walls to accommodate the longitudinal movements of said bulkhead in said boxcar, first and second upstanding locking bars arranged within said bulkhead respectively adjacent to and laterally inwardly of said first and second sides of said boundary wall, each of said locking bars being mounted for vertical movements relative to said bulkhead and between lock and unlock positions, said first locking bar being commonly operatively connected to said first locking elements, whereby vertical movement of said first locking bar into its lock position moves vertically all of said first locking elements into their lock positions and vertical movement of said first locking bar into its unlock position moves vertically all of said first locking elements into their unlock positions, said second locking bar being commonly operatively connected to said second locking elements, whereby vertical movement of said second locking bar into its lock position moves vertically all of said second locking elements into their lock positions and vertical movement of said second locking bar into its unlock position moves vertically all of said second locking elements into their unlock positions, a laterally extending shaft mounted for rotation within said bulkhead, a manually operable handle carried by the intermediate portion of said shaft and accessible from the opposite faces of said bulkhead through aligned holes respectively formed in said front and rear walls, said handle having a lock position disposed longitudinally between said front and rear walls and a first unlock position projecting longitudinally forwardly through the adjacent hole formed in said front wall and a second unlock position projecting longitudinally rearwardly through the adjacent hole formed in said rear wall, whereby pivotal movement of said handle into its lock position rotates said shaft into a corresponding lock position and pivotal movement of said handle into its first and second unlock positions rotates said shaft into corresponding first and second unlock positions, first mechanism operatively interconnecting said shaft and said first locking bar and responsive to rotation of said shaft into its lock position for moving vertically said first locking bar into its lock position and responsive to rotation of said shaft into either one of its unlock positions for moving vertically said first locking bar into its unlock position, and second mechanism operatively interconnecting said shaft and said second locking bar and responsive to rotation of said shaft into its lock position for moving vertically said second locking bar into its lock position and responsive to rotation of said shaft into either one of its unlock positions for moving vertically said second locking bar into its unlock position.

3. The railway boxcar combination set forth in claim 2, wherein each of said mechanisms essentially comprises a crank rigidly secured to said shaft, and a connecting arm one end of which is pivoted to said crank and the other end of which is pivoted to the associated one of said locking bars, said crank occupying a substantially vertical position depending from said shaft when said shaft is in its lock position thereby to lower said one locking bar into its lock position, said crank occupying an angular position with respect to the vertical when said shaft is in either one of its unlock positions thereby to raise said one locking bar into its unlock position.

4. The railway boxcar combination set forth in claim 2, and further comprising manually operable front latch mechanism mounted within said bulkhead adjacent to the hole formed in said front wall and cooperating with said handle in order selectively to latch said handle in its lock position against movement into its first unlock position, and manually operable rear latch mechanism mounted within said bulkhead adjacent the hole formed in said wall and cooperating with said handle in order selectively to latch said handle in its lock position against movement into its second unlock position.

5. In a box-like container for transporting freight and including a pair of upstanding longitudinally extending side walls disposed in substantially parallel laterally spaced-apart relation, a pair of longitudinally extending tracks respectively carried by said side walls adjacent to the tops thereof and disposed in substantially parallel laterally spaced-apart aligned relation, a plurality of longitudinally extending first perforated belt rails carried by a first of said side walls and disposed in substantially parallel vertically spaced-apart relation, and a corresponding plurality of longitudinally extending second perforated belt rails carried by a second of said side walls and disposed in substantially parallel vertically spaced-apart relation, said first and second belt rails being arranged in coordinate pairs disposed in substantially parallel laterally spaced-apart and aligned relation; the combination comprising a generally rectangular bulkhead arranged in said container, hanger structure carried by said bulkhead adjacent to the top thereof and engaging said tracks for supporting said bulkhead in upstanding position in said container extending laterally substantially between said side walls and for mounting said bulkhead for movements along said tracks into desired longitudinally spaced-apart positions in said container, a corresponding plurality of first locking dogs carried by said bulkhead adjacent to a first side thereof and disposed in vertically spaced-apart relation and respectively cooperating with said first belt rails, each one of said first locking dogs being mounted for vertical movements relative to said bulkhead and between a lock position wherein it is projected into the associated one of the perforations in the cooperating one of said first belt rails and an unlock position wherein it is withdrawn from the associated one of the perforations in the cooperating one of said first belt rails, a corresponding plurality of second locking dogs carried by said bulkhead adjacent to a second side thereof and disposed in vertically spaced-apart relation and respectively cooperating with said second belt rails, each one of said second locking dogs being mounted for vertical movements relative to said bulkhead and between a lock position wherein it is projected into the associated one of the perforations in the cooperating one of said second belt rails and an unlock position wherein it is withdrawn from the associated one of the perforations in the cooperating one of said second belt rails, whereby said locking dogs in their lock positions lock the sides of said bulkhead to said belt rails to pre-

serve the corresponding longitudinal position of said bulkhead in said container, and whereby said locking dogs in their unlock positions unlock the sides of said bulkhead from said belt rails to accommodate the longitudinal movements of said bulkhead in said container, a first upstanding locking bar carried by said bulkhead adjacent to said first side thereof and mounted for vertical movements relative to said bulkhead and between lock and unlock positions and commonly operatively connected to said first locking dogs, said first locking bar being movable vertically into its lock position to move vertically all of said first locking dogs into their lock positions and movable vertically into its unlock position to move vertically all of said first locking dogs into their unlock positions, a second upstanding locking bar carried by said bulkhead adjacent to said second side thereof and mounted for vertical movements relative to said bulkhead and between lock and unlock positions and commonly operatively connected to said second locking dogs, said second locking bar being movable vertically into its lock position to move vertically all of said second locking dogs into their lock positions and movable vertically into its unlock position to move vertically all of said second locking dogs into their unlock positions, and manually operable mechanism carried by said bulkhead for selectively and simultaneously moving vertically said locking bars between their lock and unlock positions.

6. The container combination set forth in claim 5, wherein each one of said locking dogs carries a plurality of pins that are respectively projected into a corresponding plurality of the perforations in the cooperating one of said belt rails when said one locking dog occupies its lock position and that are respectively withdrawn from the perforations in the cooperating one belt rail when said one locking dog occupies its unlock position.

7. The container combination set forth in claim 5, wherein said bulkhead is hollow including substantially parallel longitudinally spaced-apart front and rear walls and a substantially rectangular boundary wall surrounding and joining the perimeters of said front and rear walls, said first locking dogs are mounted within said bulkhead and respectively project laterally to the exterior thereof through a corresponding plurality of first openings formed in a corresponding first side of said boundary wall and disposed in vertically spaced-apart relation, said second locking dogs are mounted within said bulkhead and respectively project laterally to the exterior thereof through a corresponding plurality of second openings formed in a corresponding second side of said boundary wall and disposed in vertically spaced-apart relation, said first locking bar is mounted within said bulkhead adjacent to the inner ends of said first locking dogs and is commonly operatively connected thereto within said bulkhead, said second locking bar is mounted within said bulkhead adjacent to the inner ends of said second locking dogs and is commonly operatively connected thereto within said bulkhead, and said manually operable mechanisms includes a handle pivotally mounted within said bulkhead and accessible from the opposite faces thereof through a pair of aligned openings respectively formed in said front and rear walls, said handle having a lock position wherein it is disposed within said bulkhead and two unlock positions wherein it is respectively projected forwardly to the exterior thereof through the corresponding opening formed in said front wall and projected rearwardly to the exterior thereof through the corresponding opening formed in said rear wall.

8. In a box-like container for transporting freight and including a pair of upstanding longitudinally extending side walls disposed in substantially parallel laterally spaced-apart relation, a pair of longitudinally extending tracks respectively carried by said side walls adjacent to the tops thereof and disposed in substantially parallel laterally spaced-apart aligned relation, a plurality of longitudinally extending first perforated belt rails carried by a first of said side walls and disposed in substantially parallel vertically spaced-apart relation, and a corresponding plurality of longitudinally extending second perforated belt rails carried by a second of said side walls and disposed in substantially parallel vertically spaced-apart relation, said first and second belt rails being arranged in coordinate pairs disposed in substantially parallel laterally spaced-apart and aligned relation; the combination comprising a generally rectangular bulkhead arranged in said container, hanger structure carried by said bulkhead adjacent to the top thereof and engaging said tracks for supporting said bulkhead in upstanding position in said container extending laterally substantially between said side walls and for mounting said bulkhead for movements along said tracks into desired longitudinally spaced-apart positions in said container, first and second upstanding locking bars carried by said bulkhead respectively adjacent to first and second sides thereof, each of said locking bars being mounted for vertical movements between a lower lock position and an upper unlock position, a corresponding plurality of first locking dogs commonly carried by said first locking bar adjacent to said first side of said bulkhead and disposed in vertically spaced-apart relation and respectively cooperating with said first belt rails, each one of said first locking dogs being moved into a lower lock position wherein it is projected into the associated one of the perforations in the cooperating one of said first belt rails in response to vertical movement of said first locking bar into its lock position and into an upper unlock position wherein it is withdrawn from the associated one of the perforations in the cooperating one of said first belt rails in response to vertical movement of said first locking bar into its unlock position, a corresponding plurality of second locking dogs commonly carried by said second locking bar adjacent to said second side of said bulkhead and disposed in vertically spaced-apart relation and respectively cooperating with said second belt rails, each one of said second locking dogs being moved into a lower lock position wherein it is projected into the associated one of the perforations in the cooperating one of said second belt rails in response to vertical movement of said second locking bar into its lock position and into an upper unlock position wherein it is withdrawn from the associated one of the perforations in the cooperating one of said second belt rails in response to vertical movement of said second locking bar into its unlock position, whereby said locking dogs in their lock positions lock the sides of said bulkhead to said belt rails to preserve the corresponding longitudinal position of said bulkhead in said container, and whereby said locking dogs in their unlock positions unlock the sides of said bulkhead from said belt rails to accommodate the longitudinal movements of said bulkhead in said container, and manually operable mechanism carried by said bulkhead for selectively and simultaneously moving vertically said locking bars between their lock and unlock positions.

9. The container combination set forth in claim 8, and further comprising a corresponding plurality of first operative connections between said first locking bar and the respective ones of said first locking dogs, each of said first connections accommodating limited relative vertical movements between said first locking bar and the associated one of said first locking dogs while preventing relative rotary movements therebetween, and a corresponding plurality of second operative connections between said second locking bar and the respective ones of said second locking dogs, each of said second connections accommodating limited relative vertical movements between said second locking bar and the associated one of said

second locking dogs while preventing relative rotary movements therebetween.

10. The container combination set forth in claim **9**, and further comprising a corresponding plurality of first springs acting between said first locking bar and the respective ones of said first locking dogs to bias said first locking dogs downwardly with respect to said first locking bar, and a corresponding plurality of second springs acting between said second locking bar and the respective ones of said second locking dogs to bias said second locking dogs downwardly with respect to said second locking bar.

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ARTHUR L. LA POINT, *Primary Examiner.*

DRAYTON E. HOFFMAN, *Examiner.*