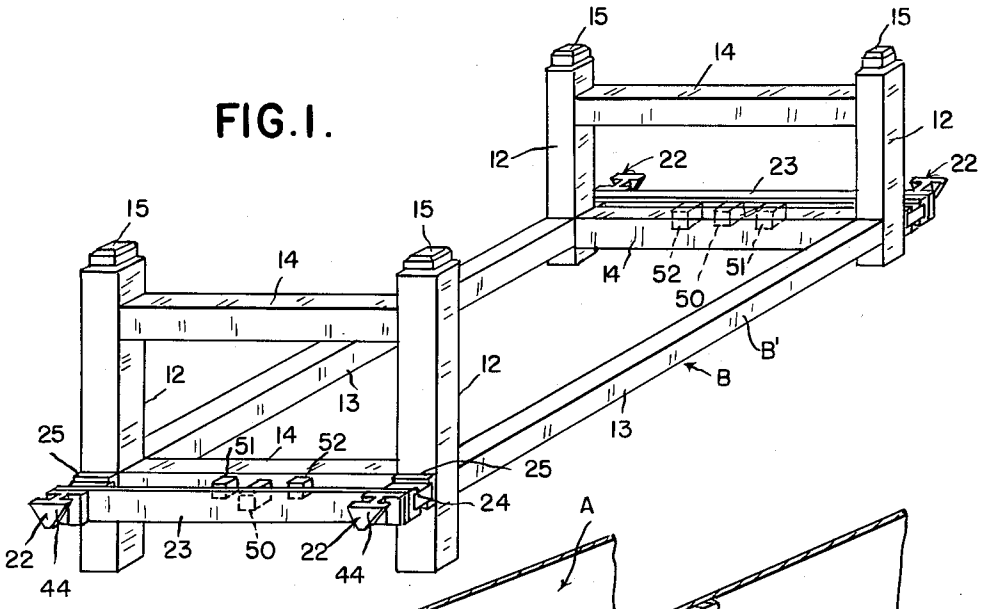
June 13, 1961 G. D. STOUGH 2,988,018

MERCHANDISE CARRYING RACK HAVING SHOCK RESISTANT COUPLING MEANS

Filed Oct. 4, 1957 2 Sheets-Sheet 1

FIG. 1.



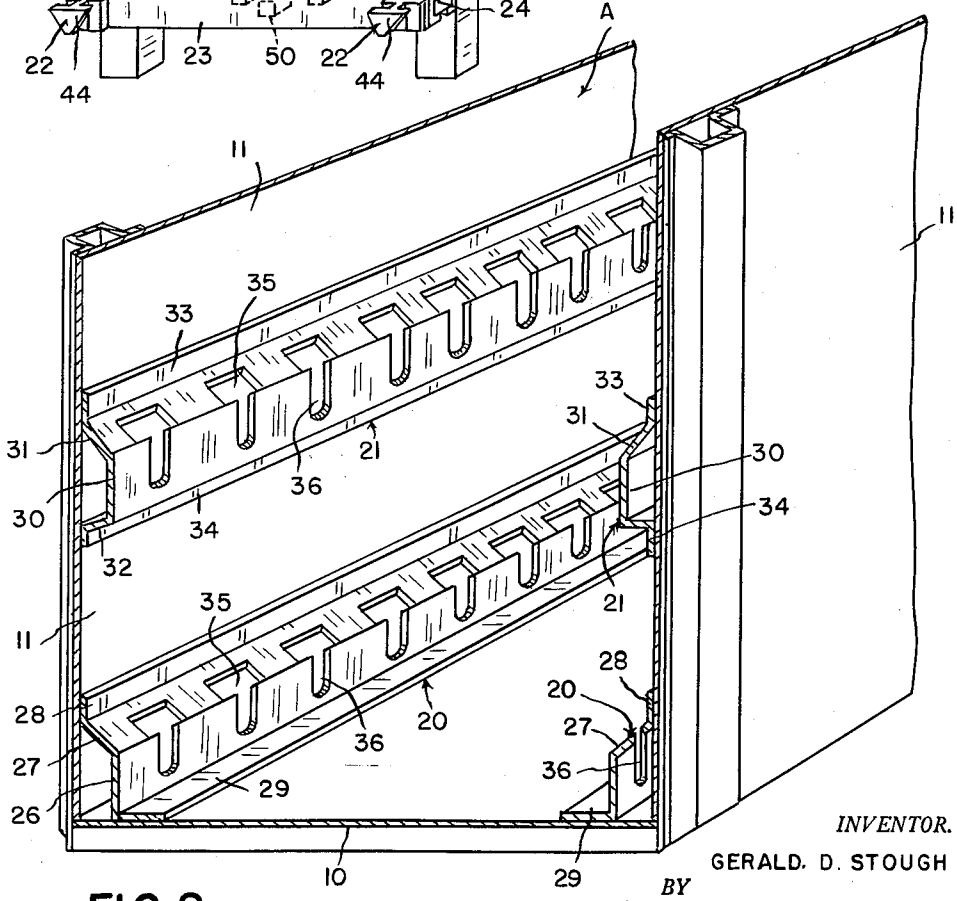


FIG. 2.

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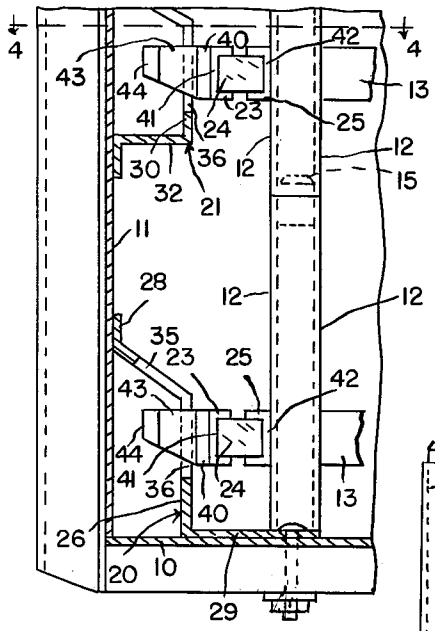


FIG.3.

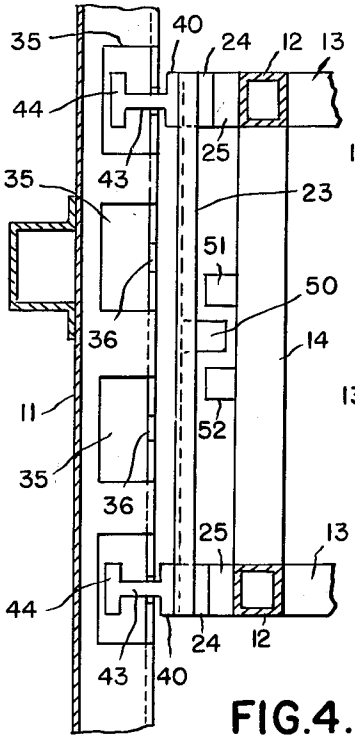


FIG.4.

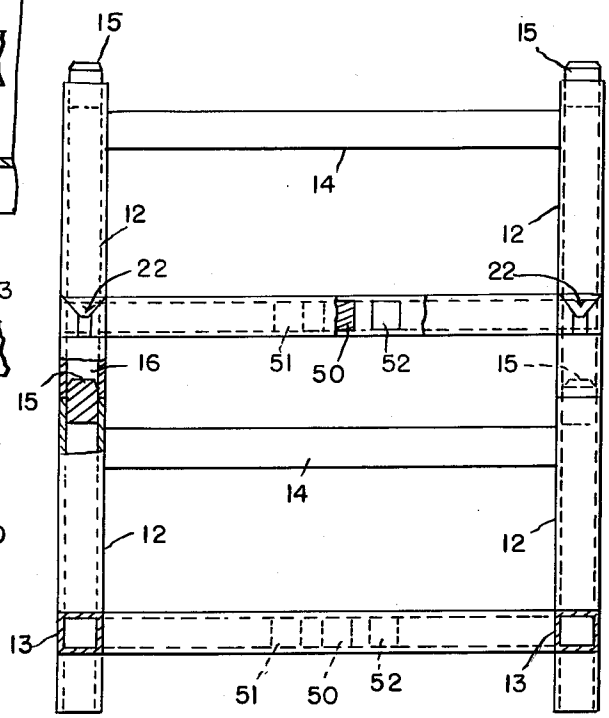


FIG.5.

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2,988,018

MERCHANDISE CARRYING RACK HAVING SHOCK RESISTANT COUPLING MEANS

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Filed Oct. 4, 1957, Ser. No. 688,237
13 Claims. (Cl. 105—369)

This invention relates generally to means for anchoring portable merchandise carrying racks or holders within the storage chambers of transport vehicles, and refers more particularly to anchorage means capable of restraining said racks against horizontal movement while permitting the static load thereof to be carried by the floor of said chamber independently of the upright side walls thereof.

The present application is a continuation-in-part of my prior copending application Serial No. 669,222, filed July 1, 1957 which is now abandoned.

One of the essential objects of the invention is to provide anchoring means on said racks at opposite ends thereof capable of being detachably interlocked automatically with cooperating anchorage means on the upright side walls of the storage chamber when such racks are lowered vertically by a lift-truck or the like toward the floor of the storage chamber.

Another object is to provide the racks with anchoring means that include yieldable members capable of absorbing the shock load when the anchored racks tend to move horizontally in either a direction transverse of the storage chamber or in a direction lengthwise of the storage chamber, and that also includes means providing positive stops for preventing the anchored racks from accidentally moving lengthwise of the storage chamber beyond predetermined limits, in the event the shock absorbing means should rupture or break loose.

Other objects, advantages and novel details of construction of this invention will be made more apparent as this description proceeds, especially when considered in connection with the accompanying drawings wherein:

FIGURE 1 is a perspective view of one of the portable racks or holders embodying my invention.

FIGURE 2 is a fragmentary perspective view of a storage chamber of a transport vehicle and showing on the spaced upright walls of said chamber anchorage members for portable racks of the type illustrated in FIGURE 1.

FIGURE 3 is a fragmentary cross sectional view through the storage chamber of the transport vehicle and showing the anchoring members at one end of stacked racks in engagement with the anchorage members upon the adjacent upright wall of said storage chamber.

FIGURE 4 is a horizontal sectional view taken substantially on the line 4—4 of FIGURE 3.

FIGURE 5 is a fragmentary elevational view of a plurality of racks or holders arranged in a vertical stack.

Referring now to the drawings, A is a transport vehicle storage chamber having a load-sustaining floor **10** and spaced upright side walls **11** extending upwardly from and rigid with said floor, and B is a portable rectangular rack or holder having a length substantially equal to the distance between the side walls **11** of the storage chamber and comprising a horizontally extending rectangular frame B^1 having upright corner posts **12** and substantially horizontal side and end bars **13** and **14** respectively extending between and rigidly connected to said posts intermediate their upper and lower ends. Such posts **12** and bars **13** and **14** may be any suitable construction and may be formed of any suitable material. Thus the bars **13** and **14** may initially be varied in construction or configuration

according to the nature of the merchandise to be carried thereby. The posts **12** constitute load-sustaining elements and are adapted to be supported upon the floor **10** of the storage chamber to transmit thereto the weight of the rack and merchandise carried thereby.

Preferably the upper ends of the posts **12** are provided with upwardly projecting pilot portions **15** for engagement with the recesses **16** in the lower ends of posts of a superimposed rack, whereby the racks may be arranged in stacked relation within the storage chamber A of a transport vehicle. Thus all available space within the storage chamber A can be utilized for the reception of the racks.

In the present instance, the means for anchoring the racks B within a transport vehicle storage chamber A comprises vertically spaced substantially horizontal rails **20** and **21** fixed to the upright side walls **11** of the storage chamber, and laterally spaced substantially T-shaped lugs **22** fixed to and projecting horizontally from transversely extending substantially horizontal channel bars **23** at opposite ends of the racks. Preferably these bars **23** bridge the outer sides of and are rigidly connected to laterally spaced blocks **24** of rubber or rubber composition which in turn are respectively rigidly connected at their inner sides to channel brackets **25** fixed to the upright posts **12** of the rack. Such channel bars **23** and channel brackets **25** constitute outer and inner rigid holders for the blocks **24** of resilient material.

The rails **20** and **21** may be formed of any suitable material such as sheet metal and may be rigidly secured by any suitable means to the upright walls **11**. Preferably the lowermost rails **20** have upright or vertically extending portions **26** spaced from the upright walls **11**, laterally extending portions **27** at the upper edges of the upright portions **26**, and attaching flanges **28** and **29** respectively at the outer edges of the lateral portions **27** and at the lower edges of the upright portions **26** and rigidly secured to the upright walls **11** and floor **10** of the transport vehicle.

The upper rails **21** have upright or vertically extending portions **30** spaced from the upright walls **11**, laterally extending portions **31** and **32** respectively at the upper and lower edges of said upright portions **30**, and attaching flanges **33** and **34** respectively at the outer edges of said lateral portions **31** and **32** and rigidly secured to the upright walls **11**.

The lateral portions **27** and **31** respectively of the rails **20** and **21** are provided with longitudinally spaced vertically open substantially rectangular apertures **35**, while the upright portions **26** and **30** of the rails **20** and **21** are provided with longitudinally spaced vertically extending elongated slots or apertures **36** that are uniform in width and open upwardly into the apertures **35** substantially midway the ends thereof.

The spacing of the apertures **35** in the lateral portions **27** and **31** and the spacing of the elongated slots **36** in the upright portions of the rails correspond to the spacing of the T-shaped lugs **22** on opposite ends of the racks or holders B. Moreover, the rails **20** and **21** and the apertures and slots in said rails are so constructed and arranged that the apertures and slots mentioned may be engaged automatically by the lugs **22** on opposite ends of the racks when the latter are lowered vertically by a lift-truck (not shown), to permit the load of the racks B to be carried entirely by the floor **10** of the vehicle independently of the upright walls **11** and rails **20** and **21**.

The lugs **22** at opposite ends of the racks have lateral attaching flanges **40** rigidly secured in surface-to-surface relation to the upright sides **41** of the channel bars **23**, and the upright sides **42** of the channel brackets **25** are rigidly secured in surface-to-surface relation to the posts

12. The blocks 24 of rubber or rubber composition are within and rigidly secured to the channels of the bars 23 and brackets 25. The lugs 22 also have horizontally extending stem portions 43 of substantially uniform or equal width provided at their outer ends with head portions 44 extending laterally from and disposed at substantially right angles to the stem portions 43.

In the present instance, the anchoring means on opposite ends of the racks B also includes means providing positive stops for preventing the anchored racks from accidentally moving lengthwise of the storage chamber A beyond predetermined limits, in the event the rubber blocks or shock absorbing elements 24 should rupture or break loose. As shown, a single metallic lug 50 is rigid with and projects horizontally from the inner side of each channel bar 23 at a point substantially midway its ends, while laterally spaced metallic lugs 51 and 52 respectively project horizontally from the outer side of each of the lowermost end bars 14 of the rack and are located upon opposite sides and substantially in the horizontal plane of the lug 50.

Thus, when the racks B are detachably interlocked with the rails 20 and 21, the channel bars 23 and the lugs 50 on the inner sides thereof will be held against movement lengthwise of the storage chamber A by the engagement of the anchoring lugs 22 on the outer sides of said bars 23 with the slots 36 in the rails 20 and 21. Inasmuch as the single lugs 50 are between and in the horizontal path of the spaced lugs 51 and 52 fixed to the outermost sides of the lowermost end bars 14 of the racks, it will be apparent that the single lugs 50 at opposite ends of each rack will provide positive abutments or stops for preventing the anchored racks from accidentally moving lengthwise of the storage chamber beyond predetermined limits, in the event the rubber blocks 24 should rupture or break loose.

In use, a rack B may be initially carried by a suitable lift-truck (not shown) to an elevated position extending transversely of the storage chamber A of the vehicle, so that the lugs 22 at opposite ends of the rack will be above and in vertical alignment with the apertures 35 in the rails 20. Then the rack B is lowered vertically by the lift-truck so that the heads 44 of the lugs 22 will move downwardly through the apertures 35 in the lateral portions 27 of the rails 20. Further vertical downward movement of the rack by the lift-truck will cause the heads 44 of the lugs 22 to pass downwardly behind the upright portions 26 of the rails 20 and will cause the stems 43 to move downwardly in the elongated slots 36. In this position, the opposite ends of the rack B are bridged by the horizontally extending rails 20, and the lugs 22 on opposite ends of the rack are detachably interlocked with the rails 20.

When the racks B are arranged in stacked relation, the posts 12 of the upper racks will be supported by and interlocked with the posts 12 of the lower racks. Thus the load of any single rack or the load of the stacked racks is carried by the floor 10 of the vehicle independently of the side walls 11 and the rails 20 and 21.

When the transport vehicle in which the racks are anchored is stopped suddenly while in motion in either a forward or a rearward direction, there is a tendency of the racks to shift or move lengthwise of the vehicle. When this occurs, the blocks 24 of rubber or rubber composition will effectively absorb the shock load and will yieldingly oppose any longitudinal movement of the racks B horizontally in a direction lengthwise of the transport vehicle.

The head portions 44 of the lugs 22, in cooperation with the upright portions 26 and 30 respectively of the rails 20 and 21 will effectively restrain the racks or holders from any displacement transversely of the vehicle.

Thus, in each instance, the stresses occasioned by any longitudinal or transverse movement of the racks B will be transmitted to the rails 20 and 21 and through them to the side walls 11 of the vehicle, but the static load of the racks will always be transmitted by the posts 12 of the racks to the floor 10 of the vehicle independently of said side walls 11 and rails 20 and 21.

In the event the rubber blocks 24 at one end of an anchored rack should rupture or break loose while the transport vehicle is stopped suddenly while in motion, then the rack would have a tendency to move in a direction lengthwise of the storage chamber of the transport vehicle and to carry with it the spaced lugs 51 and 52. However, the single lug 50 at such end of the rack would be in the path of and would constitute a rigid abutment or stop for one of the lugs 51 and 52 on the rack, depending upon the direction of movement of the transport vehicle when suddenly stopped. However, the lugs 51 and 52 can be spaced closer together so that one of said lugs will abut the lug 50 before the rubber blocks 24 rupture or break loose. Thus, depending upon when it is desired to have one of the lugs 51 and 52 abut the lug 50, the spacing of the lugs 51 and 52 relative to the lug 50 can be varied as desired and is predetermined at the time the lugs 50, 51 and 52 respectively are originally installed. Consequently, the engagement of one of the lugs 51 and 52 with the abutment lug 50 would prevent the rack from accidentally moving lengthwise of the storage chamber beyond a predetermined limit, determined by the space or distance originally provided between the engaging lug 51 or 52 and the abutment lug 50. This will effectively prevent one rack from crashing into an adjacent anchored rack in the storage chamber of the transport vehicle, and thus will prevent damage to both racks and to the merchandise carried thereby.

As above stated, the racks B may be anchored, as described, within a storage chamber of a transport vehicle. Thus the merchandise carried by the racks need not be removed therefrom from the time such merchandise is initially loaded onto the racks at the factory where the merchandise is manufactured. By use of a lift-truck (not shown) the racks B individually or in a stack may be moved into and positioned within the storage chamber of a transport vehicle so that the anchoring lugs 22 will be detachably interlocked automatically as described with the rails 20 and 21. In a reverse manner such racks B may be removed from the storage chamber of the transport vehicle.

Thus, after the original loading on the racks at the factory, the merchandise may remain intact on the racks until they reach their final destination. Accordingly a great saving in labor, time and cost may be obtained. Moreover, the construction of the anchoring means is such that the racks will be effectively held while in transit. In this connection, the transport vehicle may be either a cargo truck, a cargo trailer, a railway boxcar, a boat or an airplane.

What I claim as my invention is:

1. A portable substantially rectangular merchandise carrying rack adapted to extend transversely across an elongated longitudinally extending chamber of a transport vehicle and having a transversely extending end adapted to be substantially parallel to a longitudinally extending side wall of said chamber and adapted to be connected to rigid anchorage means on said side wall, said rack having load-sustaining means adapted to be slidably supported upon a floor of said chamber, a horizontally extending rigid bar spaced outwardly from and parallel to the end aforesaid of said rack, spaced bodies of resilient material between said rigid bar and the end aforesaid of said rack, said bodies of resilient material being at points spaced longitudinally of said rigid bar and constituting a support therefor, said bodies of resilient material being secured at one face thereof to the end aforesaid of said rack in a plane parallel thereto and being secured at their opposite face to said rigid bar in

a plane parallel thereto to yieldingly resist relative horizontal movement between said rack and said rigid bar by being stressed in shear, and rigid anchoring means rigidly secured to the outer side of said rigid bar and detachably engageable with the rigid anchorage means aforesaid.

2. A portable substantially rectangular merchandise carrying rack adapted to extend transversely across an elongated longitudinally extending chamber of a transport vehicle and having transversely extending ends adapted to be substantially parallel to opposed longitudinally extending side walls of said chamber and adapted to be connected to rigid anchorage means on said opposed side walls, said rack having load-sustaining means adapted to be slidably supported upon a floor of said chamber, horizontally extending rigid bars spaced outwardly from and parallel to the opposite ends aforesaid of said rack, a pair of spaced bodies of resilient material between each rigid bar and an adjacent end aforesaid of said rack, the bodies of each pair being at points spaced longitudinally of each rigid bar and constituting supporting means therefor, the bodies of each pair being secured at one face thereof to an end aforesaid of said rack in a plane parallel thereto and secured at the opposite face thereof to the adjacent rigid bar in a plane parallel thereto to yieldingly resist relative horizontal movement between said rack and said rigid bars by being stressed in shear, and rigid anchoring means rigidly secured to the outer sides of said rigid bars and detachably engageable with the rigid anchorage means aforesaid.

3. A portable substantially rectangular merchandise carrying rack adapted to extend transversely across an elongated longitudinally extending chamber of a transport vehicle and having a transversely extending end adapted to be substantially parallel to a longitudinal extending side wall of said chamber and adapted to be connected to rigid anchorage means on said side wall, said rack having load-sustaining means adapted to be slidably supported upon a floor of said chamber and having on the outer side of the end aforesaid outwardly opening horizontally extending rigid channel-shaped means parallel and fixed to the end aforesaid, horizontally extending rigid channel-shaped means spaced outwardly from, parallel to, opening inwardly toward, and in a common horizontal plane with said fixed channel-shaped means, bodies of resilient material extending between and rigidly anchored with in the channels of the outwardly opening and the inwardly opening channel-shaped means aforeshaped means and to yieldingly resist relative horizontal movement between said rack and said inwardly opening rigid channel-shaped means by being stressed in shear, and rigid anchoring means rigidly secured to the outer side of said inwardly opening channel-shaped means and detachably engageable with the rigid anchorage means aforesaid.

4. A portable substantially rectangular merchandise carrying rack adapted to extend transversely across an elongated longitudinally extending chamber of a transport vehicle and having transversely extending ends adapted to be substantially parallel to opposed longitudinally extending side walls of said chamber and adapted to be connected to rigid anchorage means on said opposed side walls, said rack having load-sustaining means adapted to be slidably supported upon a floor of said chamber and having on the outer sides of the opposite ends aforesaid thereof outwardly opening horizontally extending rigid channel-shaped members parallel and fixed to said ends, horizontally extending rigid channel-shaped members spaced outwardly from, parallel to, opening inwardly toward, and in a common horizontal plane with said fixed channel-shaped members, bodies of resilient material extending between and rigidly anchored within the channels of the outwardly opening and the inwardly opening channel-shaped members aforesaid to support said inwardly opening rigid channel-shaped members and to yieldingly resist relative horizontal movement between said rack and said inwardly opening rigid channel-shaped members by being stressed in shear and rigid anchoring means rigidly secured to the outer sides of said inwardly opening channel-shaped members and detachably engageable with the rigid anchorage means aforesaid.

5. The structure defined in claim 1 including rigid abutment members respectively fixed to opposed portions of said rigid bar and the end aforesaid of said rack and engageable to limit relative movement therebetween longitudinally of said rigid bar.

6. The structure defined in claim 2 including rigid abutment members respectively fixed to opposed portions of said rigid bars and the ends aforesaid of said rack and engageable to limit relative movement therebetween longitudinally of said rigid bars.

7. A portable substantially rectangular merchandise carrying rack adapted to extend transversely across an elongated longitudinally extending chamber of a transport vehicle and having transversely extending ends adapted to be substantially parallel to opposed longitudinally extending side walls of said chamber and adapted to be connected to rigid anchorage means on said opposed side walls, said rack having load-sustaining means adapted to be slidably supported upon a floor of the chamber, horizontally extending rigid bars spaced outwardly from and parallel to the ends aforesaid of said rack, a pair of spaced resilient blocks between each rigid bar and an adjacent end aforesaid of said rack, the blocks of each pair being at points spaced longitudinally of each rigid bar and constituting supporting means therefor, the blocks of each pair being secured at one face thereof to an end aforesaid of said rack in a plane parallel thereto and secured at the opposite face thereof to the adjacent rigid bar in a plane parallel thereto to yieldingly resist relative horizontal movement between said rack and said rigid bars by being stressed in shear, a plurality of spaced anchor lugs rigidly secured to each of said rigid bars and detachably engageable with the rigid anchorage means aforesaid, and rigid abutment members respectively fixed to opposed portions of said rigid bars and the ends aforesaid of said rack and engageable to limit relative movement therebetween longitudinally of said rigid bars.

8. A portable merchandise carrying rack adapted to extend transversely across an elongated longitudinally extending chamber of a transport vehicle and having end portions adapted to be disposed substantially parallel to opposed longitudinally extending upright side walls of said chamber, said end portions having load sustaining means adapted to be shiftably supported upon a floor of said chamber, bodies of resilient material upon the outer sides of and rigidly secured to the end portions of said rack, and rigid anchoring members for said rack upon the outer sides of, rigidly secured to, and supported by said bodies of resilient material, said rigid anchoring members being adapted to be detachably interlocked with rigid anchorage means on said opposed longitudinally extending upright side walls, and said bodies of resilient material being adapted when said rigid anchoring members are detachably interlocked with the rigid anchorage means on said longitudinally extending upright side walls to yieldingly restrain said rack against horizontal shifting movement lengthwise of said storage chamber by being stressed in shear.

9. The structure defined in claim 12 including rigid abutment members respectively fixed to opposed portions of said transversely extending rigid bars and said transversely extending end bars and engageable to limit relative movement therebetween longitudinally of said transversely extending rigid bars.

10. As an article of manufacture, an elongated portable merchandise carrying rack to extend across, between, and be detachably secured at opposite ends thereof to rigid anchorage means therefor at opposite upright

sides of a longitudinally extending elongated storage chamber of a transport vehicle, said rack being provided at opposite ends thereof with transversely spaced upright load-sustaining posts to be movably supported upon a floor of said storage chamber and having side and end bars respectively extending between and carried by said posts, elastic shock resistant elements carried by said posts and projecting endwise from said rack, and rigid anchoring means for said rack carried by and projecting outwardly from said elastic shock resistant elements for detachable interlocking engagement with the rigid anchorage means aforesaid at opposite upright sides of said storage chamber.

11. An elongated portable merchandise carrying rack to extend transversely across, between, and be detachably secured at opposite ends thereof to rigid anchorage means therefor at opposite upright sides of a longitudinally extending elongated storage chamber of a transport vehicle, said rack having load-sustaining means to be movably supported upon a floor of said storage chamber, a pair of transversely spaced elastic shock resistant elements carried by and projecting endwise from each end of said rack, a transversely extending rigid bar spanning the space between and carried by each pair of elastic shock resistant elements, and rigid anchoring means for said rack carried by each transversely extending bar and detachably engageable with the rigid anchorage means aforesaid, said elastic shock resisting elements being operable to yieldingly resist movement of said rack lengthwise of said storage chamber relative to said rigid bar and said rigid anchoring means while the latter is detachably engaged with said rigid anchorage means.

12. A portable substantially rectangular merchandise carrying rack to extend transversely across, between, and be detachably secured at opposite ends thereof to rigid anchorage means therefor at opposite upright sides of a longitudinally extending elongated storage chamber of a transport vehicle, said rack being provided at opposite ends thereof with transversely spaced upright load-sustaining posts to be movably supported upon a floor of said storage chamber and being provided with longitudinally extending side bars and transversely extending end bars respectively extending between and connected to said posts, transversely extending rigid bars substantially parallel to and spaced horizontally from said end bars, rigid anchoring means for said rack carried by each transversely extending rigid bar and detachably engageable with the rigid anchorage means aforesaid, and elastic shock resistant elements between and connected to said posts and said transversely extending rigid bars, said elastic shock resistant elements supporting said transversely extending rigid bars and the rigid anchoring means carried thereby and being operable to yieldingly resist movement of said rack lengthwise of said storage chamber relative to said rigid bars and said rigid anchoring means while the latter is detachably engaged with said rigid anchorage means.

13. An elongated portable merchandise carrying rack to extend transversely across, between, and be detachably secured at opposite ends thereof to rigid anchorage means therefor at opposite upright sides of a longitudinally extending elongated storage chamber of a transport vehicle, said rack being provided at opposite ends thereof with transversely spaced upright load-sustaining posts to be movably supported upon a floor of said storage chamber and being provided with longitudinally extending side bars and transversely extending end bars respectively extending between and connected to said posts, rigid means at opposite ends of said rack at approximately the level of and spaced outwardly from said end bars for detachably anchoring said rack to the rigid anchorage means therefor at opposite upright sides of said storage chamber, and elastic shock resisting connections between said rigid anchoring means and said upright posts constituting supporting means for said rigid anchoring means and operable to yieldingly resist movement of said rack lengthwise of said storage chamber relative to said rigid anchoring means while the latter is detachably anchored to said rigid anchorage means.

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