

Aug. 31, 1965

R. L. LICH

3,203,362

ADJUSTABLE BULKHEAD

Filed Jan. 12, 1962

5 Sheets-Sheet 1

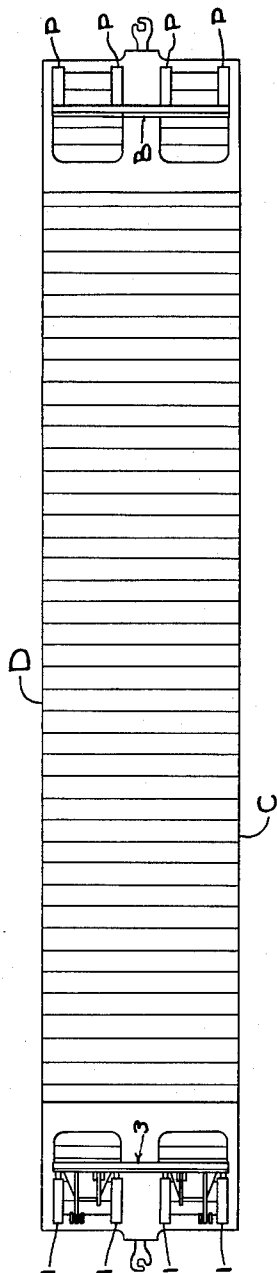


FIG. 1

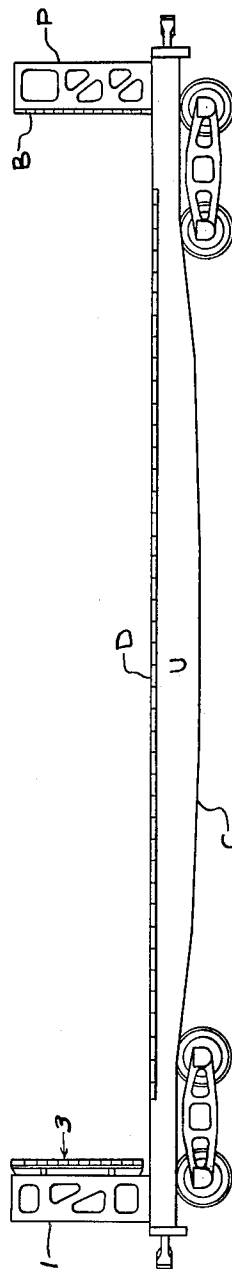


FIG. 2

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5 Sheets-Sheet 2

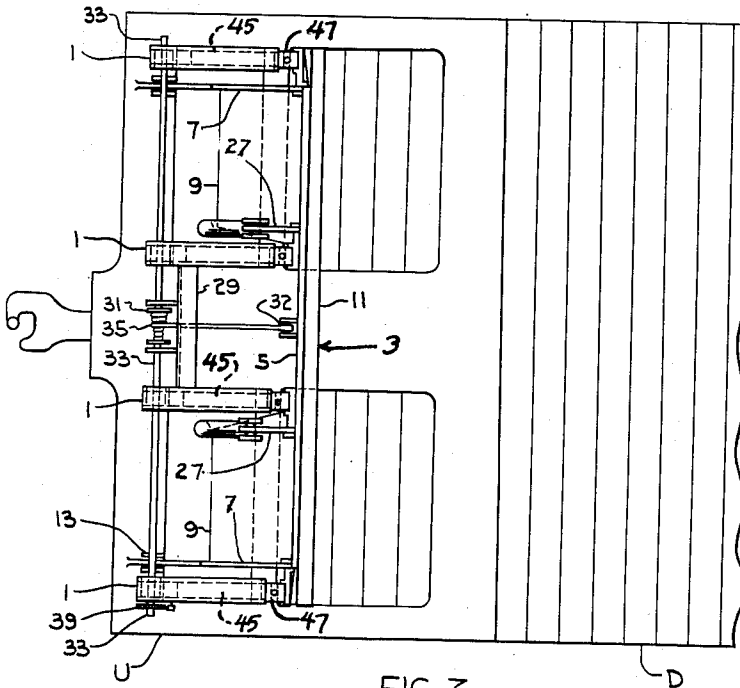


FIG. 3

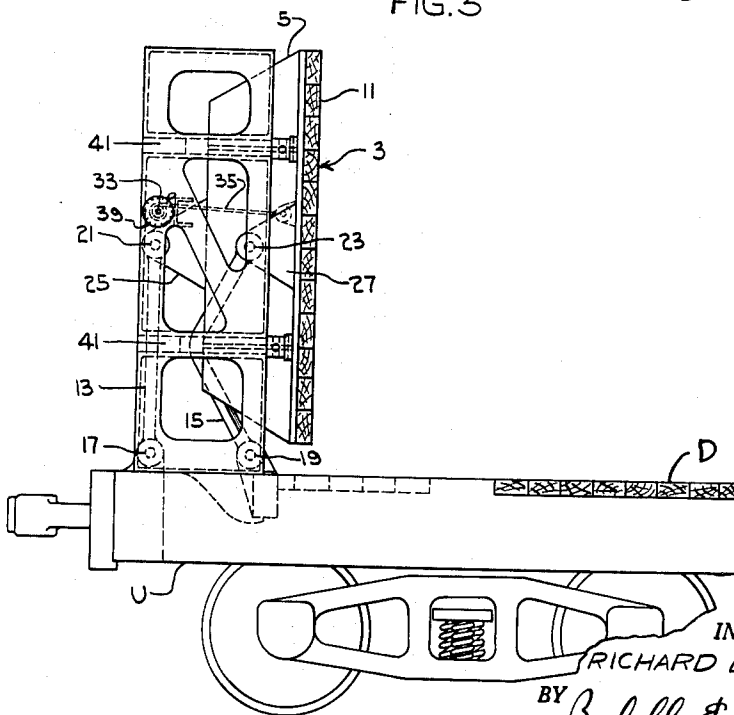


FIG. 4

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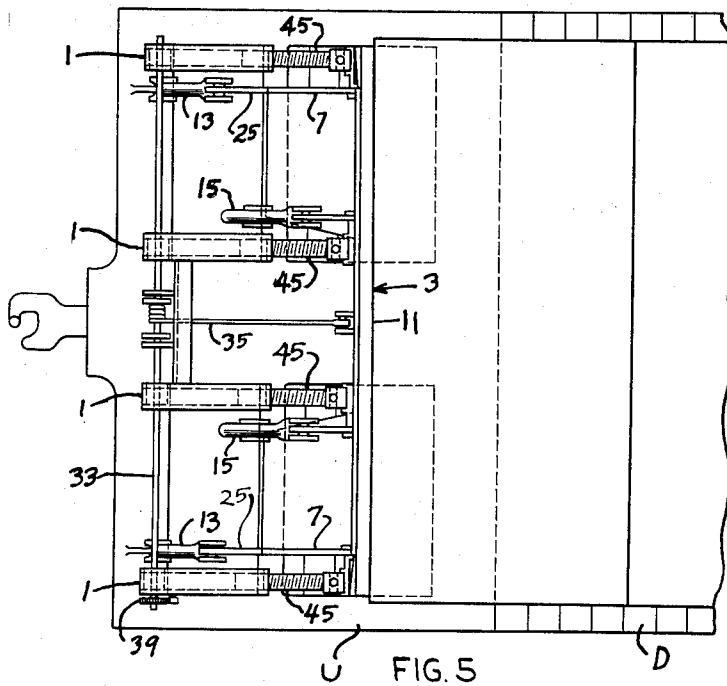
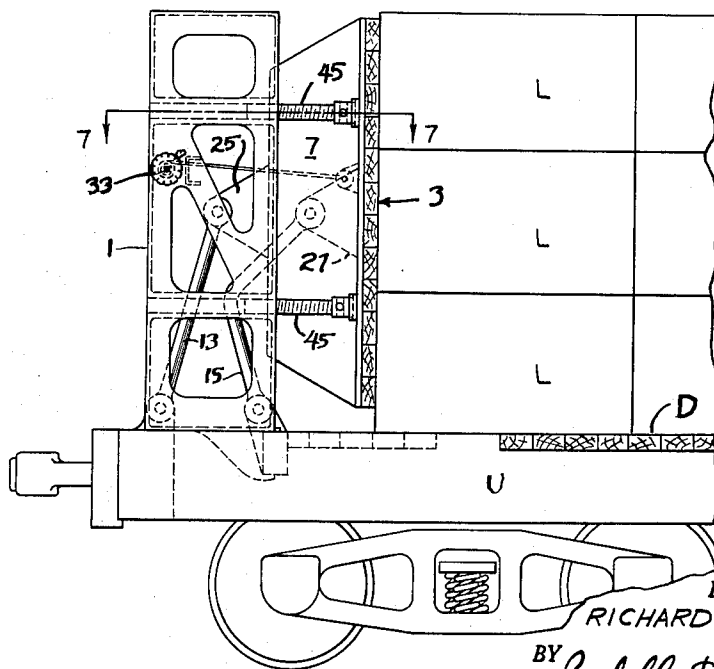
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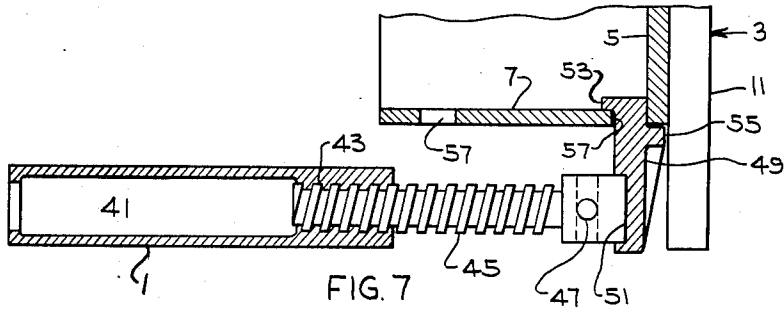
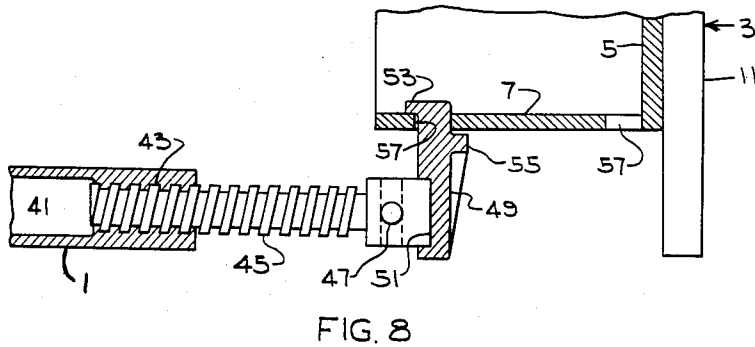
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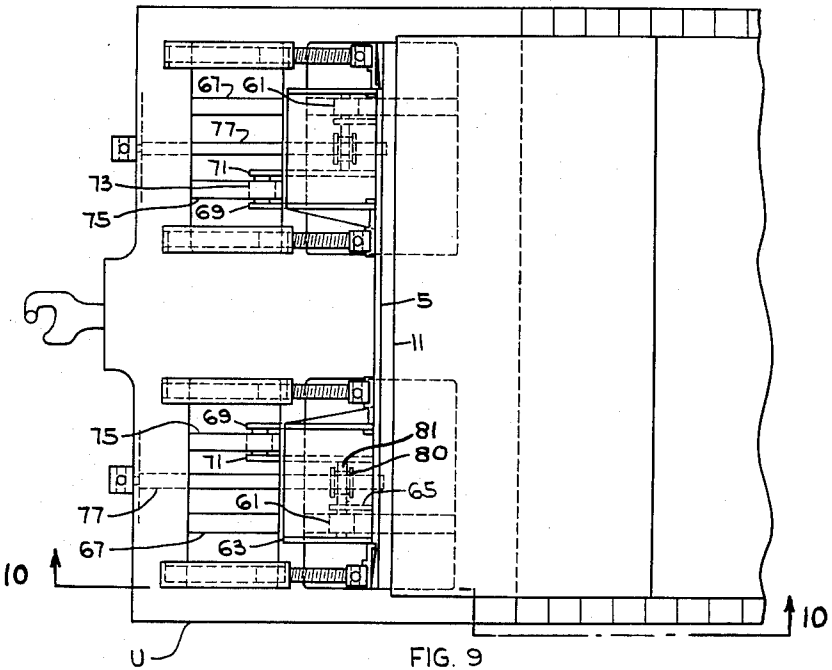


FIG. 9

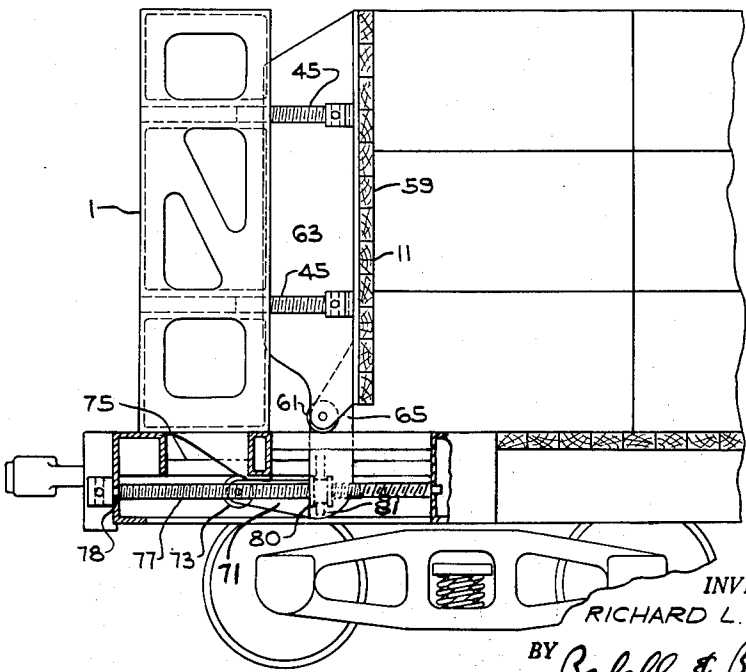


FIG. 10

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3,203,362

ADJUSTABLE BULKHEAD

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7 Claims. (Cl. 105—376)

The invention relates to railway rolling stock and consists particularly in an adjustable bulkhead for flat cars.

In order to prevent the shifting of lading longitudinally of flat cars, such cars are frequently provided with fixed bulkheads which may each consist of a plurality of posts spaced apart transversely of the car at each end and secured to the underframe and supporting a transverse wall or facing of steel or wooden planks. While such fixed bulkheads are effective, if the lading is not sufficiently long to fill the entire distance between the bulkheads at opposite ends of the car, it is necessary to put some blocking between the lading and one or both of the bulkheads to prevent undesired shifting of the lading, with consequent damage to the bulkhead and in some cases to the car underframe in the region of the bulkhead as a result of bending forces exerted on the underframe by deflection of the bulkhead from its normal upright position.

It accordingly is the main object of the present invention to provide, in combination with fixed bulkhead structure, a movable bulkhead adapted for adjustment lengthwise of the car so as to engage lading which is shorter than the distance between the bulkheads at the opposite ends and effectively prevent its shifting.

A further object is to provide a movable bulkhead which is easily adjustable by manual means without the use of any special tools.

An additional object is to provide an adjustable bulkhead in which the adjustment means and the means for carrying the load longitudinally from the adjustable to the fixed bulkhead are separate from each other.

The foregoing and additional objects and advantages are achieved by the structures illustrated in the accompanying drawings, in which:

FIG. 1 is a top view of a flat car equipped with an adjustable bulkhead according to the present invention.

FIG. 2 is a side elevation view of the flat car illustrated in FIG. 1.

FIG. 3 is an enlarged top view of the adjustable bulkhead end of the flat car shown in FIG. 1, showing the details of the adjustable bulkhead structure.

FIG. 4 is a side view corresponding to FIG. 3.

FIGS. 5 and 6 correspond to FIGS. 3 and 4 respectively but show the adjustable bulkhead in its extended position.

FIGS. 7 and 8 are fragmentary horizontal sectional views along line 7—7 of FIG. 6.

FIG. 9 is a top view of a modified form of the invention.

FIG. 10 is a side view of the modified section shown in FIG. 9.

Referring now to the drawings, letter C refers to a flat car having an underframe U, a deck D and mounting at its right hand end, as viewed in FIGS. 1 and 2, a fixed bulkhead comprising four upright posts P, preferably of cast steel construction, spaced apart transversely of the car and faced with wooden planks as at B.

At the opposite end of the car four upright posts 1 are spaced apart transversely of the car and are rigidly secured to the car underframe preferably in the manner disclosed in Patent 2,640,443 to Albert M. Schieler. Posts 1 provide backing for a movable bulkhead generally indicated at 3 and comprising a transversely extending vertical plate 5, four spaced apart backup ribs 7, a pair of which are nested between each pair of outside and

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intermediate posts 1, the adjacent pairs of ribs 7 being connected by vertically spaced pairs of horizontal webs 9, thus providing a vertically rigid framework for the adjustable bulkhead. Plate 5 of the framework is preferably faced with planks 11 for engagement with the lading.

For supporting the adjustable bulkhead 3 and facilitating its movement lengthwise of the car relative to the fixed posts 1, a pair of upright struts 13 and 15, spaced apart longitudinally of the car, are pivoted at their lower ends at 17 and 19 respectively to upstanding brackets on underframe U and at their upper ends they are pivoted respectively at 21 and 23 to rearwardly extending brackets 25 and 27 on the framing of adjustable bulkhead 3, upper pivots 21 and 23 being spaced apart lengthwise of the car the same distance as the lower pivots 17 and 19. When the adjustable bulkhead 3 is fully retracted the upper pivots 21 and 23 of struts 13 and 15 are at their maximum height from the car deck and the lower edge of adjustable bulkhead 3 is elevated slightly above the car deck. It will thus be evident that irrespective of its position lengthwise of the car the face of bulkhead 3 will always be vertical, and the bulkhead will be freely movable lengthwise of the car by gravity in the direction of the lading and retractable by mechanical means which will hereinafter be described.

For retracting the bulkhead 3 into its normal nesting relation with posts 1, the intermediate posts 1 are connected by a transverse beam 29 which mounts a hand operated winch 31, the shaft 33 of which extends outwardly in both directions to the outer posts 1 from which it projects laterally outwardly, and its ends are apertured to permit the insertion of a crowbar or other suitable tool for its operation. Winch 31 mounts a cable 35, the free end of which is attached at 37 to the middle of bulkhead 3. At one end shaft 33 and the associated posts 1 are provided with pawl and ratchet 39 for retaining the winch in any desired position corresponding to a desired retracted position of the bulkhead.

Adjustable bulkhead 3 is normally retained in the position shown in FIGS. 3 and 4 by winch 31 and cable 35. When a car so equipped is loaded, the lading is placed against the fixed bulkhead at the opposite end and distributed along the deck of the car, and as soon as the car is fully loaded, pawl and ratchet 39 is released and the bulkhead is permitted to gravitate and consequently move longitudinally of the car into engagement with the lading as may be seen in FIGS. 5 and 6.

For maintaining the bulkhead in its lading-engaging position and for transmitting the longitudinal loading from the lading to the fixed posts 1, fixed posts 1 are each provided with recesses 41, in part internally threaded as at 43 (as best seen in FIG. 7) and screws 45 are received in recesses 41 for longitudinal movement therein, the head of screws 45 being apertured as at 47 to permit the insertion therethrough of a crowbar or other suitable tool for assistance in manually rotating them. The heads of screws 47 are each operatively connected to the adjustable bulkhead by a removable bracket 49 which is formed at one end with a pocket 51 adapted to receive the head of screw 45 and at its other end with offset shoulders 53 and 55, adapted to engage opposite surfaces of bulkhead frame ribs 7 when bracket 49 is inserted in suitable slots 57 in ribs 7. To permit the maximum adjustment of the bulkhead 3 lengthwise of the car, two slots 57 are provided in each of the ribs 7 adjacent the screws 45 so that when the bulkhead is fully retracted, the forward recess, i.e., the one nearest the face of the bulkhead will be far enough out from fixed posts 1 to permit substantially full retraction, and when it is desired to extend the bulkhead a greater distance from the fixed bulkhead than that shown in FIG. 7, bracket 49 can be removed from

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the forward slot in rib 7 and inserted in the rear slot, as shown in FIG. 8, and the screw 45 can be adjusted accordingly.

When the adjustable bulkhead 3 is moved by gravitation into contact with the lading as described above, adjustment brackets 49 are positioned either in the forward or rear slots in ribs 7 depending on the amount of extension of the bulkhead from posts 1, and screws 45 are turned manually until they are in tight engagement with brackets 49, thus rigidly fixing the position of the adjustable bulkhead relative to the fixed posts 1 and preventing any shifting of the lading lengthwise of the car, as well as transmitting any load due to attempted shifting of the lading from the adjustable bulkhead, thence into the fixed posts 1 and through the latter into the car underframe.

A modified form of the invention is shown in FIGS. 10 and 11, in which corresponding numbers will be used for parts corresponding to those illustrated in FIGS. 1-9. In this form of the invention adjustable bulkhead 59 is provided with a pair of rollers 61 rotatably mounted between rearwardly extending ribs (corresponding generally to ribs 7 of the first form of the invention) and suitable brackets 65 extending rearwardly from the bulkhead frame plate 5; rollers 61 rest on longitudinal members 67 of the car underframe U' for stabilizing the bulkhead, inner ribs 69 and are provided with a depending hook-shaped extension and a depending bracket 71 similar to the depending extension of rib 69 is mounted on bulkhead frame plate 5 and is provided with a similar depending extension. Roller 73 rotatably mounted between the depending extensions of ribs 69 and brackets 71 engages the underside of longitudinal frame members 75 and cooperate with rollers 61 to stabilize the bulkhead against tilting while it is being moved from one adjustment to another.

Movement of the bulkhead is accomplished by a pair of screws 77 spaced apart transversely of the car and held against movement longitudinally of the car by a cooperating groove and restricted opening at 78 in the car end sill 79. Screws 77 each pass through a threaded block 80 in a transverse rib 81 mounted between brackets 65 and 71 on the bulkhead so that rotation of screws 75 will cause corresponding movement lengthwise of the car of the bulkhead into or out of engagement with the lading, the position of the bulkhead being fixed and loads being transmitted therefrom into the end posts by screws 45 and cooperating structure as described hereinabove with relation to the first form of the invention.

The exclusive use of modifications coming within the scope of the appended claims is contemplated.

What is claimed is:

1. An adjustable bulkhead device for use on a horizontal load supporting surface, comprising upstanding structure fixed on the surface, a vertically disposed movable bulkhead structure normally positioned adjacent said fixed structure, means for moving said movable structure in a direction perpendicular to its general plane to selected positions spaced from said fixed structure and for maintaining said movable structure substantially upright at all times, and means independent of said first named means providing horizontal support for said movable structure from said fixed structure, said first named means comprising a pair of struts each pivotally connected at its lower end to said fixed structure and at its upper end to said movable structure and normally supporting the same in elevated relation to the load supporting sur-

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face, the pivot axes being parallel to the general plane of said movable structure and forming the corners of a parallelogram, the upper ends of said struts and said movable structure being at their maximum heights when said movable structure is fully retracted toward said fixed structure whereby movement of said movable structure away from said fixed structure is effected by gravity.

2. An adjustable bulkhead device according to claim 1 in which there are a plurality of pairs of said struts spaced apart transversely of the bulkhead.

3. An adjustable bulkhead device according to claim 2 including a winch journaled on said fixed structure and having cable connected at its free end to said movable structure for retracting said movable structure toward said fixed structure.

4. An adjustable bulkhead according to claim 3 including a ratchet device on said winch holding the latter against undesired unwinding movements.

5. An adjustable bulkhead device for use on a horizontal load supporting surface, comprising upstanding structure fixed on the surface, a vertically disposed movable bulkhead structure normally positioned adjacent said fixed structure, means for moving said movable structure in a direction perpendicular to its general plane to selected positions spaced from said fixed structure and for maintaining said movable structure substantially upright at all times, and means independent of said first named means providing horizontal support for said movable structure from said fixed structure, said fixed structure including horizontal members and said first-named means comprising a first bearing means mounted on said movable structure and resting upon a horizontal member, a second bearing means mounted on said movable structure and underlyingly engaging a horizontal member, said second bearing means being spaced from said first bearing means along the direction of movement of said movable structure, a screw rotatably journaled at its ends in said fixed structure below said horizontal member, said movable structure including a threaded aperture spaced vertically from said first bearing means and lengthwise of the direction of movement of said movable structure from said second bearing means, said screw being threadably mounted in said aperture and cooperating with said spaced bearing means to maintain said movable structure upright and to move said movable structure in a direction perpendicular to its plane.

6. An adjustable bulkhead device according to claim 5 in which said first bearing means is substantially at the level of the horizontal load supporting surface and said second bearing means and said screw are at a level lower than said first bearing means.

7. An adjustable bulkhead device according to claim 5 in which there are a pair of said first and second bearing means spaced apart transversely of the bulkhead.

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