

March 5, 1957

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2,783,508

REINFORCEMENT FOR BARRICADE FOR BOXCAR DOORS

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2 Sheets-Sheet 1

Fig. 1.

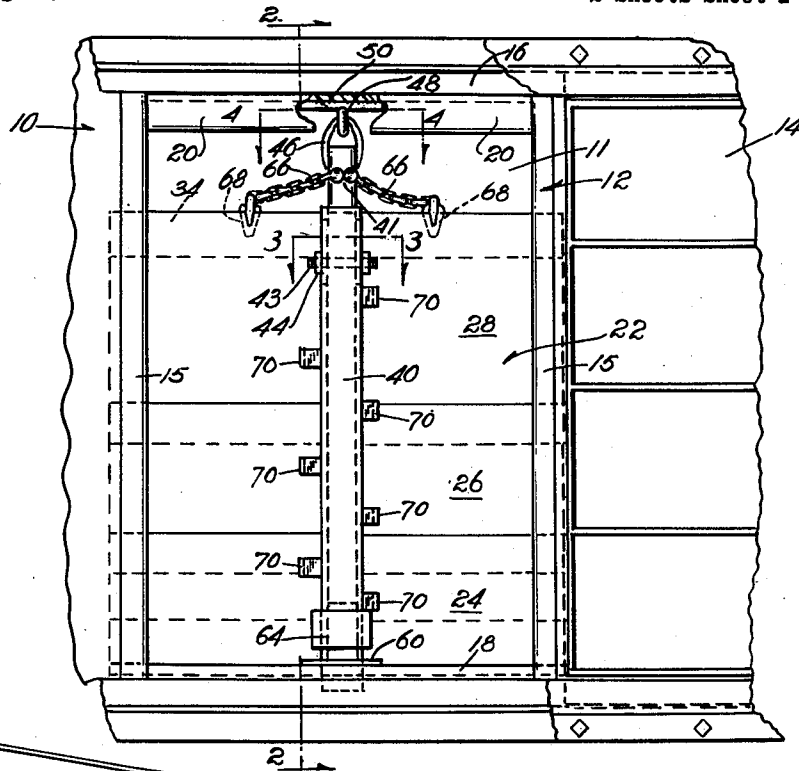


Fig. 2.

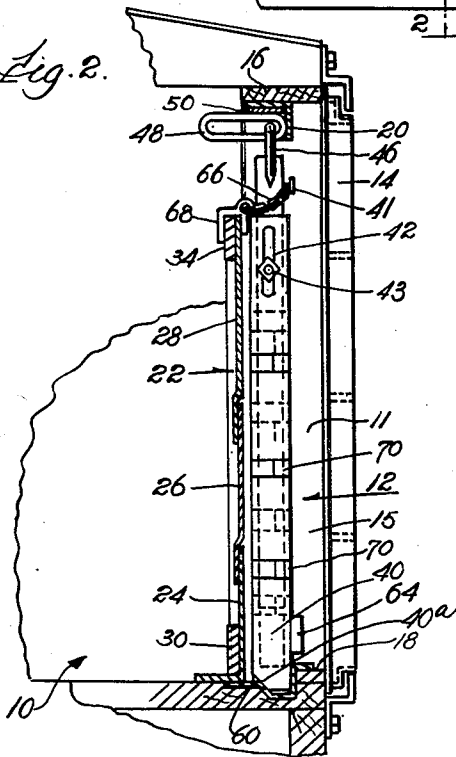


Fig. 3.

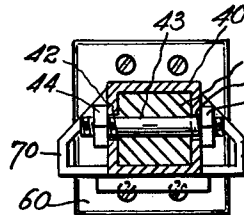
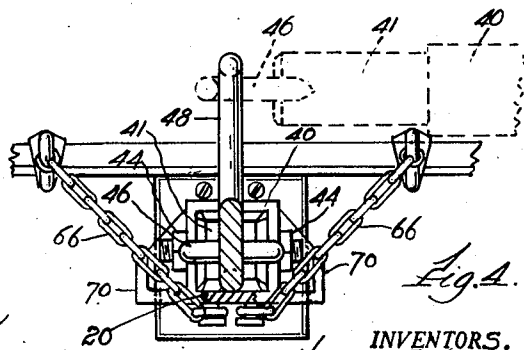


Fig. 4.



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2 Sheets-Sheet 2

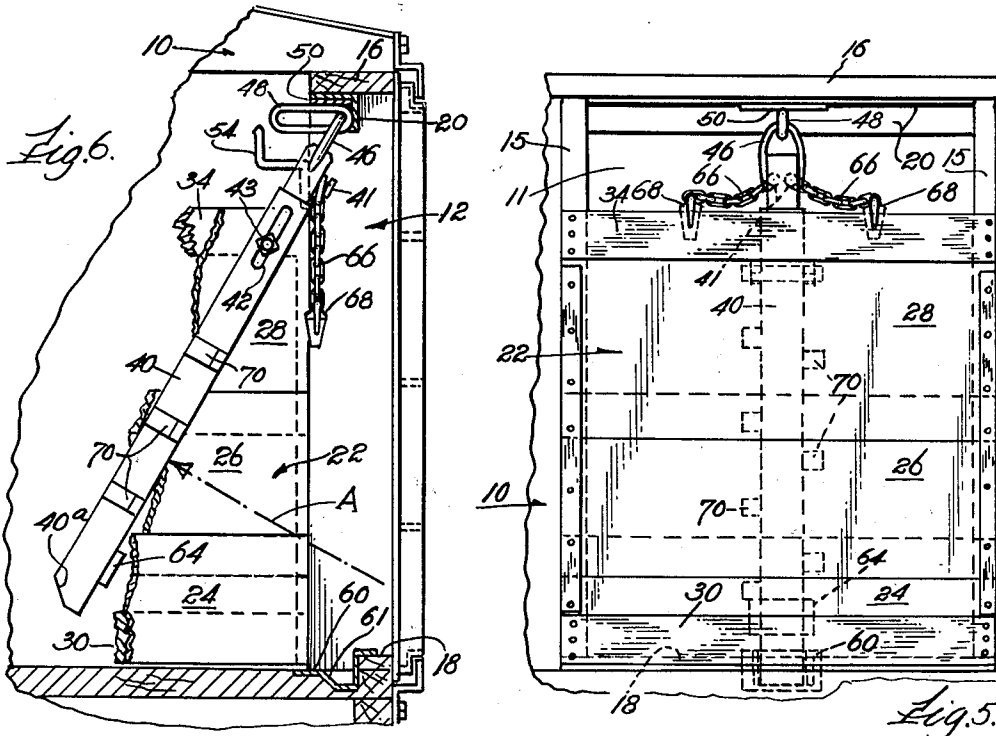
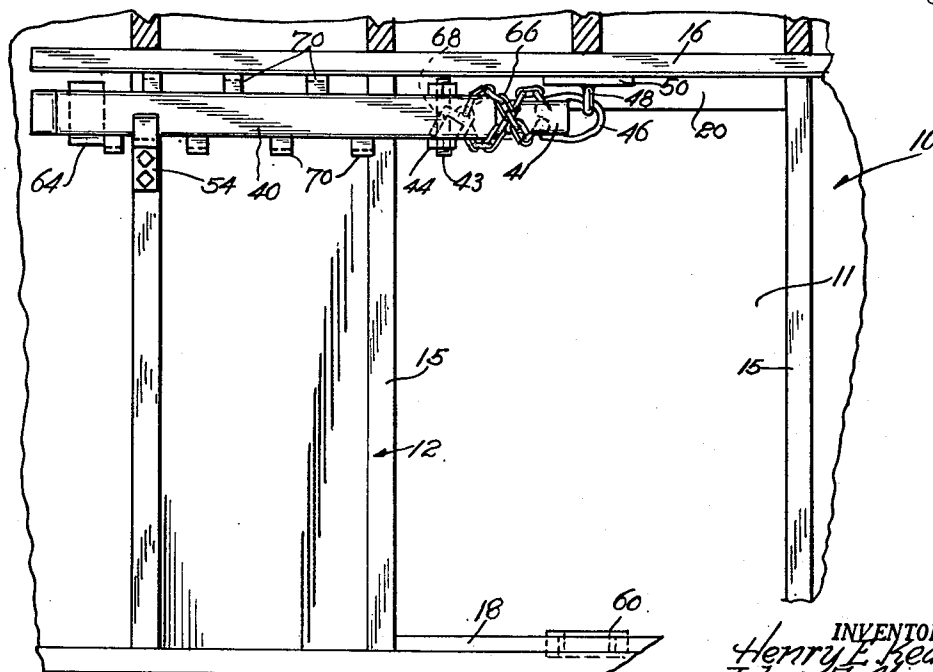


Fig. 7.

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REINFORCEMENT FOR BARRICADE FOR BOXCAR DOORS

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14 Claims. (Cl. 20—27)

The present invention relates to temporary barricades, or inner doors, such as used in freight cars for handling of grain or other bulk commodities. More particularly, the present invention is directed to a novel reinforcement for such barricades or inner doors.

As is well known, the cars used by railroads in handling of grain or other bulk materials are of the usual type referred to as freight cars or box cars. While such cars are provided with the usual outer storm door or weather door, it has been common practice to place a suitable barricade, or inner door, in position across the door opening, on the inside of the car, in order to reduce possible loss of contents, such as by leakage from the car, to a practical minimum. Such barricades, or inner doors, are usually of substantial height, and terminate a short distance from the top of the door opening so as to afford access to the interior of the car, above the barricade, for checking, inspecting or sampling the grain or other material therein.

Heretofore, such barricades, or inner doors, were made up of an assembly of wood boards or panels, either secured together as a unit for attachment, such as by nailing to the inside of the door posts, adjacent the door opening, or the boards or panels are individually nailed in place so as to build up a closure across the major portion of the height of the door opening. Because such inner doors, or barricades are of a temporary nature, and are usually destroyed in the process of discharging the contents from the car, or become lost, such as by theft, the more recent practice employed is to form such temporary barricades or inner doors of rather inexpensive material, such as heavy paperboard panels, together with suitable metal strapping positioned across the door opening, in front of the paperboard panels, and nailed to the door posts on the inside of the car. To further reinforce such barricades, it has been customary to employ a wood pry board across the door opening, at the bottom thereof, and also a wood board across the door opening, adjacent the upper edge of the barricade. When a car is loaded with grain or other granular bulk material, such barricades are usually subjected to relatively high pressures from the material in the car and which results in the barricade bulging outwardly through the door opening. Sometimes such bulging results in rupturing of the barricade, or inner door, in the normal handling of box cars or freight cars in switchyards or the like. Sometimes the pressure of the material within the car causes the barricades to bulge into direct contact with the outer storm door or weather door of the car, and thus makes it difficult for a grain inspector to open the storm door in order to obtain access to and sampling of the material in the car. Sometimes, in the process of opening the storm door, if the barricade is bulged outwardly in contact therewith, the barricade, or inner door, is ruptured, resulting in a substantial loss of the contents of the car.

Because barricades or inner doors, as now employed, are not of sufficient strength so as to be capable of with-

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standing substantial shocks to which cars are normally subjected to, such as occurs in being shunted in switchyards and the like, substantial loss of the material from the cars frequently occurs. This results in substantial damage claims being filed against the railroad.

One of the objects of the present invention is to provide a novel construction which effects great reinforcement of the barricade, or inner door, of the railroad car, so as to substantially eliminate possibility of the barricade, or inner door, being bulged outwardly into direct contact with the storm door of the car, and which will effect great reduction in inadvertent rupture of the barricade, and thus reduces the possibility of loss of the bulk contents from the car.

Another object is to provide a novel reinforcement for barricades of grain car door openings, which reinforcement is permanently attached to the car so as to avoid accidental loss, theft or damage thereto.

A further object is to provide a novel reinforcement of the character indicated which is pivotally supported at its upper end in the door opening, and which is constructed and arranged so as to be releasably latched at its lower end in the door opening, in an upright position immediately in front of the barricade and which reinforcement, when not in use, may be swung interiorly of the car to an approximately horizontal inoperative position, with its free end suitably seated on a support, inside the car, so as to afford free access and egress through the car door opening when the barricade is removed.

Still another object is to provide a novel reinforcement of the character indicated, having a series of spaced apart stepped members arranged thereon so that when the reinforcement is disposed in operative position, the steps may be conveniently employed as a ladder for affording access over the barricade to the interior of the car.

A still further object is to provide a novel reinforcement of the character indicated which is simple in construction, effective in use and which is capable of being economically manufactured in a manner so as to lend itself for convenient use in car door openings of varying heights.

Other objects and advantages of this invention will be apparent from the following description, taken in connection with the accompanying drawings, in which:

Figure 1 is a fragmentary, side elevational view of the central door of a railroad car, provided with the reinforcement embodying the present invention;

Figure 2 is a vertical sectional view, taken as indicated on line 2—2 on Figure 1;

Figures 3 and 4 are enlarged, transverse sectional views, taken as indicated on lines 3—3 and 4—4 respectively, on Figure 1;

Figure 5 is an elevational view, from the interior of the car, showing a barricade in place and the reinforcement in an operative position with respect to the barricade;

Figure 6 is a vertical view, similar to Figure 2, showing the reinforcement moved inwardly and effecting rupture of the barricade, for discharging the contents from the car;

Figure 7 is an elevational view, from the interior of the car, showing the reinforcement supported in an out-of-the-way inoperative position.

In the drawings, a conventional box car or freight car, shown fragmentarily, is indicated generally at 10, having in one of its side walls a central door opening 11, surrounded by a frame 12. Mounted on the exterior of the side of the car is a conventional weather or storm door 14, adapted for normally closing the door opening 11. The door frame includes a pair of uprights or posts 15, constituting a part of the door jamb, connected at their upper ends by a top frame member 16, and at their bot-

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toms by a member 18. Permanently attached to the underside of the top frame member 16 is a structural angle member 20.

A temporary barricade or inner door, indicated generally at 22, may be made up of superimposed sections of wood boards, or may be made of one piece or a plurality of pieces of heavy paperboard. As shown in the drawings by way of illustration, the inner door is made up of a series of heavy paperboard sections or panels 24, 26 and 28, which are arranged in lapped relation to each other, as clearly seen in Figure 2 of the drawings. The lowermost panel 24 has a bottom portion bent inwardly and seated and secured directly upon the floor of the car to assist in further sealing of the door opening. A suitable pry board or timber 30 is placed against the inside of the lower panel member 24, and to reinforce the upper edge of the barricade, a suitable board or timber 34 is employed. The panels or sections, together with the boards 30 and 34 are all attached to the posts 15 of the door frame of the door opening in any convenient manner, such as by nailing. The purpose of the board 34 is to normally provide a support for a conventional ladder to permit convenient access to the interior of the car, over the barricade. Sometimes suitable metal strapping is extended across the door opening, and secured to the jamb members 15, and positioned immediately in front of the panel members to assist in sustaining the pressures of the bulk contents in the car against the barricade or inner door.

For reinforcing the barricade or inner door 22, we provide a novel reinforcing structure comprising an elongated body adapted, when in operative position, to extend substantially upright and approximately centrally of the door opening, as clearly seen in the drawings. As shown, the reinforcing body is pivotally suspended from the upper frame member 16 of the door opening but may be supported on a vertical surface, adjacent the door opening, depending on the particular construction of the car. Said body comprises two main members 40 and 41 telescoped one within another, and as may be seen in the drawings, the outer member 40 is hollow for the major portion of its length, for accommodating the member 41 telescopically therein. The outer member is provided at opposite sides, adjacent its upper end, with an elongated slot 42, through which project the terminal ends of a stud 43, fixedly secured, such as by welding, in the inner member 41. Nuts 44 are mounted on the outer ends of the stud and adapted, when tightened, to secure the two members 40 and 41 in a desired position of telescopic adjustment relative to each other. Such telescopic adjustment of the two members 40 and 41 is for the dual purpose of permitting convenient latching of the lower end of the member 40 in an operative position, and for enabling the assembly to adapt itself for use with cars having different heights of door openings. By reason of the stud 43 being permanently attached to the inner reinforcing member 41, the two members 40 and 41 normally cannot be totally separated, and thus prevents unauthorized removal or theft of the members.

The upper end of the inner member 41 is provided with a bail 46, which is seated in a horizontally extending loop 48, carried on a fixture or plate 50, which is preferably welded to the structural member 20 so as to preclude accidental or unauthorized removal of the reinforcement with respect to the car. As may be seen in the drawings, the loop member 48 extends in a direction normal to the plane of the door opening. The entire reinforcement assembly may be moved along the loop 48 and may assume an operative position, as seen in Figure 2, within the door opening or may be moved along the loop and be disposed within the car so that it may be swung upwardly about the pivotal connection to the loop and assume a substantially horizontal, inoperative position against either the roof or the side of the car, as repre-

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sented in dotted lines in Figure 4 and as seen in Figure 7. To assist in supporting the reinforcing assembly in an inoperative position, a suitable bracket, as indicated at 54, is provided on the side wall of the car, as clearly seen in Figures 6 and 7 of the drawings.

The lower end of the reinforcement, and more particularly the outer member 40, is adapted, when disposed in operative position, to be seated in locking engagement in a latch plate 60, recessed in the floor of the car or frame member of the door opening. Seating of the outer member 40 in the latch plate is accommodated by the relative telescopic movement of the outer member 40 with respect to the member 41, provided by the clamping stud 43 and nuts 44. When the member 40 is in an operative locking position with respect to the latch plate 60, the members 40 and 41 together may be rigidly secured in such extended position by the stud 43 and nuts 44. The socket portion of the latch plate is formed with a rearwardly and upwardly inclined wall 61, and the lower rear portion of the outer member 40, as clearly seen in Figures 2 and 6, is correspondingly inclined, as indicated at 40a, for purposes as will be presently described.

As may be seen in the drawings, the reinforcement is shown positioned immediately in front and in close spaced apart relation to the barricade 22, so that a relatively small amount of outwardly bulging of the barricade is permitted before encounter with the reinforcement. If desired, the support for the reinforcement and its latch plate may be so located that its supporting surface, with respect to the barricade, is aligned approximately flush with the inner faces of the door jamb.

Mounted on the outer face of the lower portion of the member 40 of the reinforcing assembly is a combination striker bar and pry-plate 64. Depending upon the facilities available at the time the contents of the car are to be removed, the barricade can be manipulated to suit the condition. For certain conditions, the contents of the car, at least initially, may be removed by first loosening the nuts 44 so as to permit relative telescopic movement of the two members 40 and 41. Then, by the use of suitable equipment, such as a bulldozer, pressure is forcibly applied against the striker plate 64, exerting a force against the entire reinforcing assembly in an inward direction, causing the lower end of the member 40 to cam up the incline 61 out of locking engagement with the latch plate, and is moved inwardly, as indicated by the arrow A in Figure 6, for rupturing the entire barricade 22, and permitting the contents of the car to freely spill out of the door opening 11. In other cases it may be desired to gradually effect initial removal of the contents of the car. For this purpose, the nuts 44 are first loosened and a suitable implement, such as a crowbar or pry bar, is placed beneath the pry-plate 64 so as to permit upward telescopic movement of the member 40 with respect to the member 41 so as to disengage the member 40 from the latch plate 60. Then, by a suitable instrument, the lower portion of the barricade is ruptured, such as by dislocating the lower panel 24 and board 30, after which the other panel sections may be conveniently removed.

When the reinforcement is in operative latched position, bulk material within the car exerts substantial pressure against the barricade and the reinforcement. Accordingly, when the reinforcement is moved out of engagement with the latch plate, by prying action, as above referred to, the pressure of bulk material exerted through the barricade will tend to forcibly swing the reinforcement outwardly, through the door opening. To avoid possible injury to a person standing nearby, we provide suitable check-chains, as indicated at 66, the upper ends of which are connected to the member 41 and the opposite ends of which are provided with suitable hooks 68, adapted to be hooked over the upper edge of the barricade, including the upper board 34, so as to limit

the outward swinging movement of the reinforcement under such conditions.

In order to afford convenient access to the interior of the car, while the barricade is in position, in order to permit inspection, testing and sampling the contents, we provide on the reinforcement a series of vertically spaced step members, indicated at 70, arranged in staggered relation, so as to perform the function of a ladder. Heretofore, it has been necessary for an inspector to provide a suitable ladder for hooking over the upper edge of the barricade in order to climb thereover and gain access to the interior of the car.

It will be apparent that by virtue of the present invention, we have provided a novel reinforcement which greatly reduces the possibility of inadvertent rupture of a barricade due to excessive load, or due to the barricade bulging in direct contact with the weather door, or due to movement of the weather door in process of opening when it is engaged by the barricade. Our novel reinforcing structure is such that it becomes a permanent part of the car and cannot be readily disassembled, and hence, inadvertent loss or theft of parts is reduced to a practical minimum. When the reinforcement is not to be used, it may conveniently be disposed in out-of-the-way position, within the car, to afford convenient access or egress through the car door opening.

By virtue of the reinforcement embodying the present invention, the inner door can now be made of light weight materials which will result in substantial economy in manufacture of such doors.

It will be apparent while we have herein shown and described one specific manner of pivotally mounting the upper end of the reinforcing member, said pivotal mounting may be a universal joint, or a conventional hinge arrangement, or any other arrangement that provides the desired pivotal movement. Also, the interconnection between the two telescopic members of the reinforcement may be reversed, that is, the slots may be on the inner member, and suitable means coacting with the slots may be carried on the outer member.

Although we have herein shown and described a certain preferred embodiment of our invention, manifestly it is capable of modification and rearrangement of parts without departing from the spirit and scope thereof. We do not, therefore, wish to be understood as limiting this invention to the precise embodiment herein disclosed except as we may be so limited by the appended claims.

We claim:

1. For use with a box car having a side wall provided with a door opening defined by a door frame, and an expendable barricade removably mounted on the inner face of the frame and extending across the door opening; a movable reinforcement pivotally connected at its upper end in the door frame for swinging movement about an axis parallel to the main plane of the door opening and adapted to be positioned uprightly, immediately in front of the barricade, and means recessed in the floor of the door opening for releasably locking the lower end of the reinforcement in the bottom of the door frame when said reinforcement is in an upright position.

2. For use with a box car having a side wall provided with a door opening defined by a door frame, and an expendable barricade removably mounted on the inner face of the frame and extending across the door opening; a movable reinforcement pivotally connected at its upper end in the door frame for swinging movement about an axis parallel to the main plane of the door opening and adapted to be positioned uprightly, immediately in front of the barricade, said reinforcement comprising a pair of telescopically connected elongated members, means for releasably securing said members in a desired position of telescopic adjustment, and latch means carried on the bottom of the door frame for receiving the lower end of the reinforcement when in an upright operative position.

3. For use with a box car having a side wall provided with a door opening defined by a door frame, and an expendable barricade removably mounted on the inner face of the frame and extending across the door opening; a movable reinforcement pivotally connected at its upper end in the door frame for swinging movement about an axis parallel to the main plane of the door opening and adapted to be positioned uprightly, immediately in front of the barricade, said pivotal connection comprising a bail at the upper end of the reinforcement and a supporting bracket engaged by the bail and providing a horizontal slot through which said bail extends, whereby the reinforcement may be bodily moved into the car, beyond the door frame, for free swinging movement to an inoperative, approximately horizontal position, means within the car, engageable by the free end of the reinforcement for supporting in said inoperative position, and means for releasably locking the lower end of the reinforcement in the bottom of the door frame when said reinforcement is in an upright position.

4. For use with a box car having a side wall provided with a door opening defined by a door frame, and a barricade removably mounted on the inner face of the frame and extending across the door opening; a movable reinforcement pivotally connected at its upper end in the door frame and adapted to be positioned uprightly, immediately in front of the barricade, said reinforcement comprising a pair of telescopically connected, elongated members, means for releasably securing said members in a desired position of telescopic adjustment, and latch means carried on the bottom of the door frame for receiving the lower end of the reinforcement when in an upright operative position, said latch plate having a rearwardly and upwardly inclined cam surface and the lower end of the reinforcement being provided with a cooperating surface, whereby application of pressure to the outer face of the reinforcement, after release of said securing means, causes said cam surfaces to effect telescopic movement of one member relatively to the other and disengagement from the latch plate.

5. For use with a box car having a side wall provided with a door opening defined by a door frame, and a barricade removably mounted on the inner face of the frame and extending across the door opening; a movable reinforcement pivotally connected at its upper end in the door frame and adapted to be positioned uprightly, immediately in front of the barricade, means for releasably locking the lower end of the reinforcement in the bottom of the door frame when said reinforcement is in an upright position, and a series of step members connected to and arranged along the length of the reinforcement.

6. For use with a box car having a side wall provided with a door opening defined by a door frame, and an expendable barricade removably mounted on the inner face of the frame and extending across the door opening; a movable reinforcement pivotally connected at its upper end in the door frame for swinging movement about an axis parallel to the main plane of the door opening and adapted to be positioned uprightly, immediately in front of the barricade, said reinforcement comprising a pair of telescopically connected elongated members, means for releasably locking the lower end of the reinforcement in the bottom of the door frame when said reinforcement is in an upright position, and restraining means connected to said reinforcement and having a free end formed for engaging the upper portion of the barricade for limiting outward movement of the reinforcement through the door opening.

7. For use with a box car having a side wall provided with a door opening defined by a door frame, and an expendable barricade removably mounted on the inner face of the frame and extending across the door opening; a movable reinforcement pivotally connected at its upper end in the door frame for swinging movement about an

axis parallel to the main plane of the door opening and adapted to be positioned uprightly, immediately in front of the barricade, said reinforcement comprising a pair of telescopically connected elongated members, means for releasably locking the lower end of the reinforcement in the bottom of the door frame when said reinforcement is in an upright position, and a combination abutment and pry bar mounted on the lower end and outer surface of the reinforcement.

8. For use with a box car having a side wall provided with a door opening defined by a door frame, and an expendable barricade removably mounted on the inner face of the frame and extending across the door opening; a movable reinforcement pivotally connected at its upper end in the door frame for swinging movement about an axis parallel to the main plane of the door opening and adapted to be positioned uprightly, immediately in front of the barricade, said reinforcement comprising two elongated members one telescoped into the other, the outer member having a longitudinally extending elongated slot, a threaded stud extending through the slot and rigidly attached to the inner member, a nut on the end of the stud for firmly securing said members in an adjusted telescopic position relative to each other, and latch means on the bottom of the door frame and engageable by the lower end of the reinforcement when the latter is in upright operative position.

9. For use with a box car having a side wall provided with a door opening defined by a door frame, and an expendable barricade removably mounted on the inner face of the frame and extending across the door opening; a movable reinforcement pivotally connected at its upper end in the door frame for swinging movement about an axis parallel to the main plane of the door opening and adapted to be positioned uprightly, immediately in front of the barricade, said reinforcement comprising two elongated members one telescoped into the other, one of the members having a longitudinally extending elongated slot, means on the other member and extending into said slot for connecting the members together and limiting extent of telescopic movement relatively to each other, means for firmly securing said members in an adjusted telescopic position relative to each other, and latch means on the bottom of the door frame and engageable by the lower end of the reinforcement when the latter is in upright operative position.

10. For use with a box car having a side wall provided with a door opening defined by a door frame, and an expendable barricade removably mounted on the inner face of the frame and extending across the door opening; a movable reinforcement, means for pivotally supporting said reinforcement at its upper end in the door frame in an upright position, immediately in front of the barricade, for swinging movement about an axis parallel to the main plane of the door opening, and means recessed in the floor of the door opening for releasably securing the lower end of the reinforcement in the bottom of the door frame to preclude outward movement of the lower end of the reinforcement through the door opening.

11. For use with a box car having a side wall provided with a door opening defined by a door frame, and an expendable barricade removably mounted on the inner face of the frame and extending across the door opening; a movable reinforcement, means for pivotally supporting said reinforcement at its upper end in the door frame in an upright position immediately in front of the barricade, for swinging movement about an axis parallel to the main plane of the door opening, said reinforcement comprising a pair of cooperating telescopically associated, elongated members, and means for releasably securing the lower end of the lower member to the bottom of the door frame to preclude outward movement of the lower end of the reinforcement through the door opening.

12. For use with a box car having a side wall provided with a door opening defined by a door frame, and an expendable barricade removably mounted on the inner face of the frame and extending across the door opening; a movable reinforcement, means for pivotally supporting said reinforcement at its upper end in the door frame in an upright position, immediately in front of the barricade, for swinging movement about an axis parallel to the main plane of the door opening, said reinforcement comprising a pair of cooperating telescopically associated, elongated members, and means for releasably securing the lower end of the lower member to the bottom of the door frame, said means comprising a latch plate recessed in the bottom of the door frame for receiving the lower end of the reinforcement when in an upright operative position to preclude outward movement of the lower end of the reinforcement through the door opening, said latch plate having an inwardly and upwardly inclined cam surface, and the lower end of the lower member of the reinforcement being provided with a cooperating inclined surface, whereby application of pressure to the outer face of the reinforcement, causes telescopic movement of one member relatively to the other and disengagement from the latch plate.

13. For use with a box car having a side wall provided with a door opening defined by a door frame, and an expendable barricade removably mounted on the inner face of the frame and extending across the door opening; a movable reinforcement, means for pivotally supporting said reinforcement at its upper end in the door frame in an upright position, immediately in front of the barricade, for swinging movement about an axis parallel to the main plane of the door opening, said reinforcement comprising two elongated members, one telescoped into the other, one of the members having a longitudinally extending elongated slot, a confining element extending through the slot and rigidly attached to the other member, to permit limited telescopic movement of said members relative to each other, and means recessed in the bottom of the door frame and engageable by the lower end of the reinforcement, when the latter is in upright, operative position to preclude outward movement of the lower end of the reinforcement through the door opening.

14. For use with a box car having a side wall provided with a door opening defined by a door frame, and an expendable barricade removably mounted on the inner face of the frame and extending across the door opening; a moveable reinforcement, means for pivotally supporting said reinforcement at its upper end in the door frame in an upright position, immediately in front of the barricade, for swinging movement about an axis parallel to the main plane of the door opening, said reinforcement, comprising two elongated tubular members, one telescoped into the other, one of the members having a pair of oppositely disposed, longitudinally extending elongated slots, a confining element carried by the other member and extending into said slots of said one member for connecting the members together and permitting limited telescopic movement relatively to each other, and means recessed in the bottom of the door frame and engageable by the lower end of the reinforcement when the latter is in upright, operative position, to preclude outward movement of the lower end of the reinforcement through the door opening.

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