

June 6, 1939.

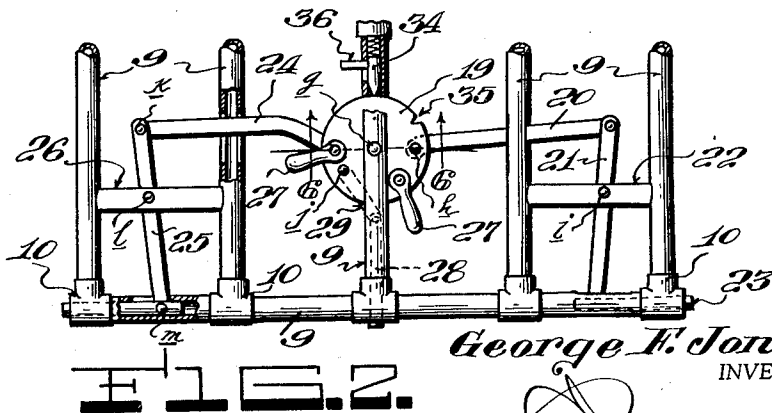
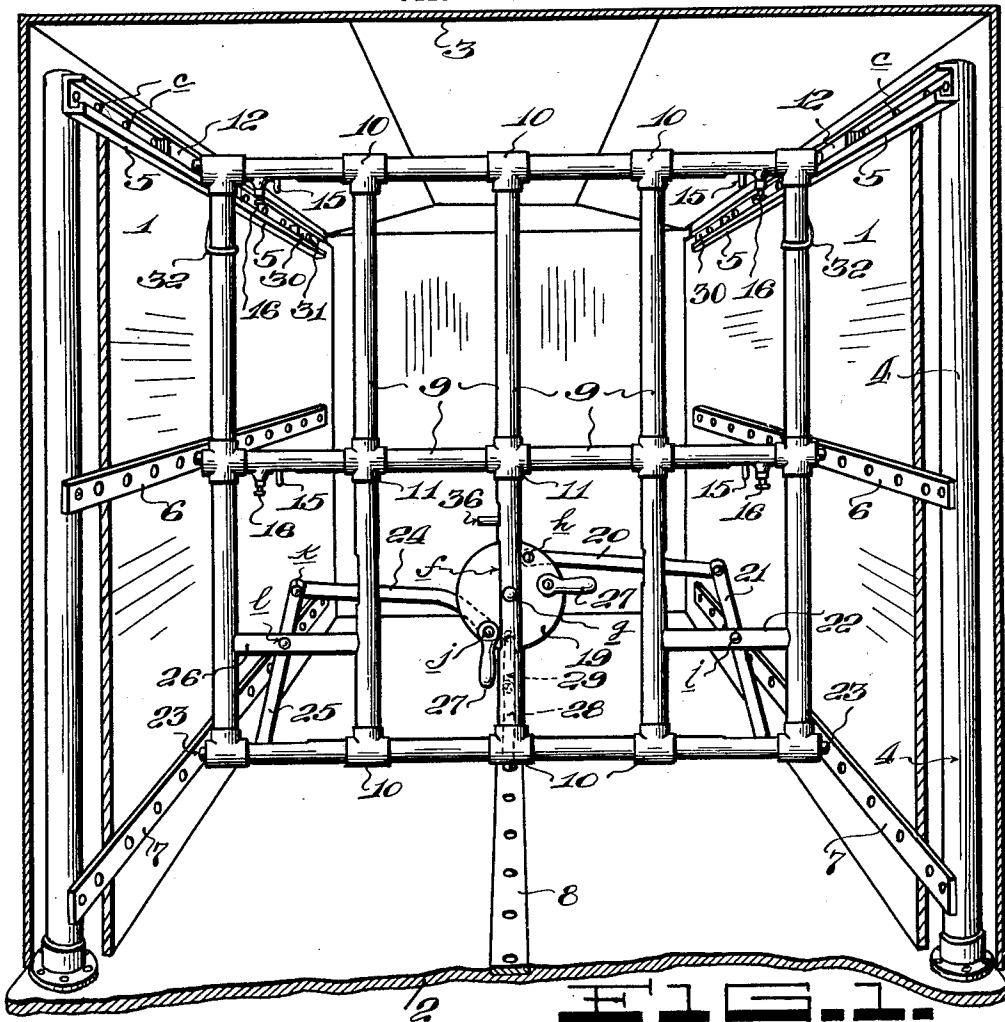
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2,160,870

OVERHEAD DROP BULKHEAD GATE

Filed June 25, 1936

2 Sheets-Sheet 1



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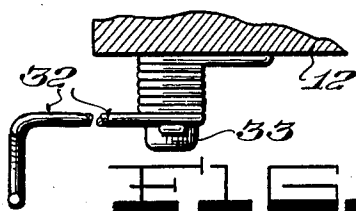
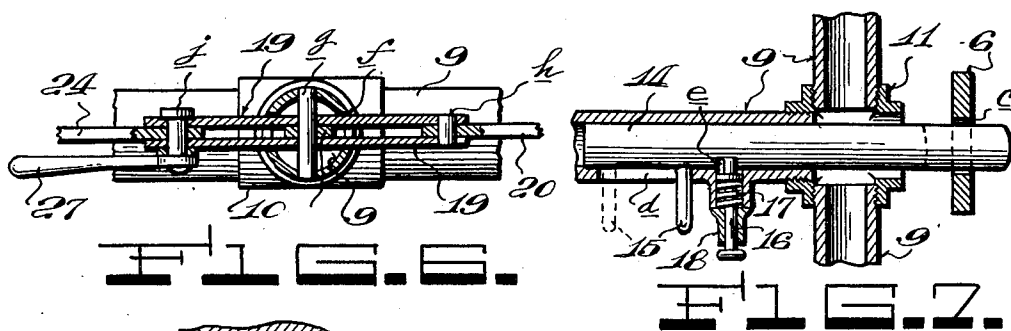
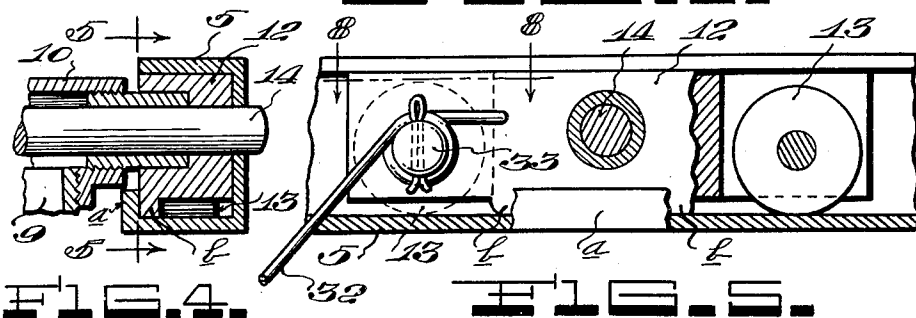
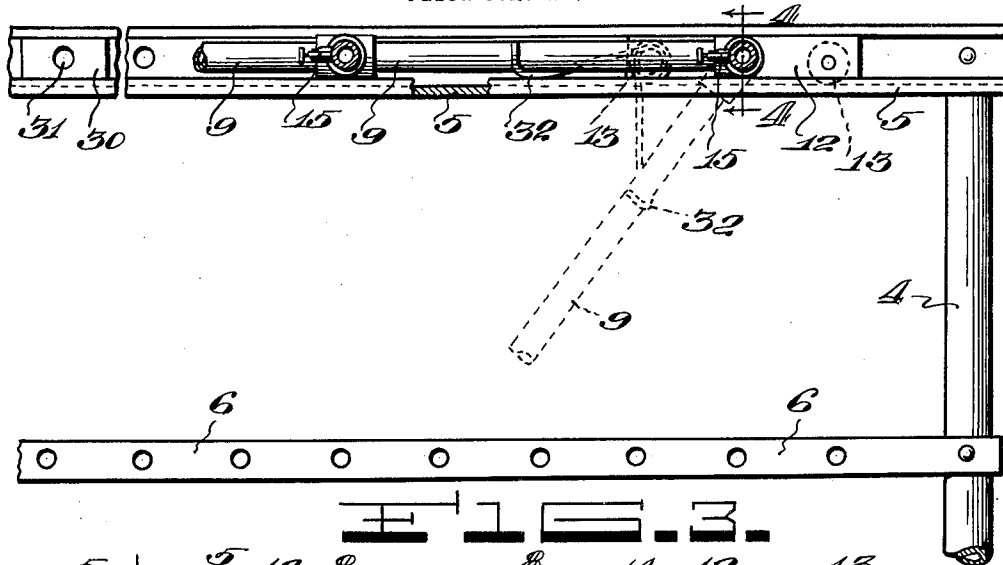
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OVERHEAD DROP BULKHEAD GATE

Filed June 25, 1936

2 Sheets-Sheet 2



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2,160,870

OVERHEAD DROP BULKHEAD GATE

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2 Claims. (Cl. 105—376)

This invention relates to railway equipment and it has particular reference to improvements in overhead bulkhead drop gates for railway cars.

The principal object of the invention is to provide effective means, readily available for separating railway shipments in box and refrigerator cars into independent sections, each section being divided by one of the bulkhead drop gates of the invention, which is equipped with means to lock the same in operative as well as inoperative position to preclude any possibility of accidental displacement.

Another object of the invention is to eliminate the necessity of "bulkheading" lading for shipment, which is an expensive practice and is detrimental to the equipment as these temporary bulkheads are usually nailed to the walls and floor of the cars and constant change in location obviously results in disfigurement of the walls.

Still another object of the invention is to prevent shifting of the lading in the car and the consequent damage thereto as a result of such shifting and the invention likewise protects the car ends against undue pressure of the lading when subjected to rough handling, since the gates assume their proportionate share of the strain imposed upon the load by sudden shocks. Accordingly, merchandise, both heavy and light, sturdy and fragile, may be shipped in the same car by separating it through the medium of the bulkhead gates.

With the foregoing objects as paramount, the invention has further objects as well as certain novel, details of construction, to become manifest as the description proceeds, taken in connection with the accompanying drawings, wherein:

Figure 1 is a transverse section of a box car, showing in perspective, a unit of the invention.

Figure 2 is a fragmentary view of a unit of the invention, showing the details of the multiple locking means.

Figure 3 is a detail view, fragmentarily showing the channel rail support and the relative positions of the gate thereto.

Figure 4 is a fragmentary detail view in cross-section of one of the journal boxes affording a fulcrum for the upper end of a gate and is taken on line 4—4 of Figure 3.

Figure 5 is a view on lines 5—5 on Figure 4.

Figure 6 is a detail of the locking means on lines 6—6 on Figure 2.

Figure 7 is a detail, partly in section of one of the latches for either suspending the gate or for securing the same against the shipment, and

Figure 8 is a detail view of the yielding suspension means, preventing the gate from falling against the shipment, shown on lines 8—8 on Figure 5.

Continuing with a more detailed description of the drawings, reference is primarily made to Figure 1 of the drawings wherein 1 designates the exterior walls of a conventional box car, 2, the floor and 3, the top of the car. For the sake of clarity, only the exterior walls of the car are shown, but in actual practice, it is desirable that the supporting posts 4 for the bulkhead gate structure be positioned between the inner and outer walls of the car and will thereby be concealed. Only the supporting rail or channel 5, the intermediate, lower and base locking, rails, 6, 7 and 8 respectively, will be exposed, and even these will be countersunk into the walls and floor of the car.

The present invention is an improvement on that illustrated and claimed in the patent issued to the present applicant on May 5, 1931, No. 1,803,760.

Proceeding with the description; the gate proper, of which there will be any number desired, is also shown in Figure 1, with details of construction shown in the other figures. This gate is comprised primarily of tubular members 9 of suitable dimension and weight, connected together by means of T-joints and unions 10 and 11 respectively to provide a rigid frame. The upper end of the gate is suspended operatively for swinging movement, from the channel rails 5, through the medium of a pair of conversely related journal blocks 12, shown in detail in Figures 4 and 5.

The journal blocks 12 are grooved lengthwise to receive rollers 13 at either end thereof and which rollers travel on the lower flanges of the channel rails 5. The edges of these flanges are turned up at *a*, as shown in Figures 4 and 5. Moreover, the blocks themselves are provided with depending projections *b* which engage the upwardly turned portions *a* of the rails to retain the blocks in operative relationship with the rails.

It will be understood that at no time are the gates released from the journal boxes but the journals or gudgeons 14, which suspend the gate relative to the blocks 12, are capable of longitudinal displacement together with the blocks, the purpose of which is to secure and release the gate with respect to the channel rails 5, it being pointed out that these rails are perforated at *c* (Fig. 1) with which perforations, the apertures in the blocks 12 register. It is possible therefore to project the gudgeons 14 into the perforations *c*

of the rails, thus to hold the blocks and the gate against displacement once it is locked or latched.

The latching means for the gate consists of the structure shown in Figure 7. The gudgeon 14 is arranged for sliding movement, as stated, in the ends of the upper member 9 of the gate. A slot *d* is made in the underside of the tubular member 9, through which a pin 15, secured in the gudgeon, protrudes, and by which, the gudgeon is manually moved. To lock the gudgeon in operative relationship with the channel rails 5, a slot *e* (Fig. 7) is made in the gudgeon to be received by a pin 16, retained, under pressure of spring 17, by a ferrule 18 affixed to or integral with the tubular member 9. The spring 17 normally urges the pin 16 into engagement with the gudgeon 14, therefore, when the latter has been moved to its extreme outward position, it is locked in such position by the pin, which holds the journal box 12 and consequently the gate against displacement from a predetermined position.

The foregoing description of the gate latching means refers also to the means for securing the gate at an intermediate point to the intermediate locking rails 6. These rails, as will be seen in Figure 1 are likewise perforated at spaced intervals throughout their length and whose apertures are in vertical alignment with the apertures *c* of the channel rails 5. There is no difference in structure of the latching means of the channel rail from that of the intermediate rails, hence the illustration, Figure 7, suffices for both and further reference thereto is considered unnecessary.

Concerning the locking means for the lower portion of the gate, reference is made to Figures 1 and 2. In these figures, a disc or rather a pair of discs 19 are disposed face to face and rotatably arranged in a slot *f* in the central tubular member 9 of the gate. These discs afford an eccentric connection for a pair of arms, as will be later shown and is pivoted at *g* to said central member 9.

An arm 20 is connected pivotally to the discs 19 at *h*, and to a second arm 21. This latter arm is pivoted intermediate its ends at *i* to a cross member 22 and at its other end to a sliding pin or gudgeon 23 which is arranged for longitudinal displacement in the lowermost horizontal tubular member 9 of the gate, so as to enter one of the several apertures in the lower locking rail 7. Thus, it will be seen that by slightly rotating the discs 19, arm 20 will be moved inwardly and outwardly, imparting a similar movement to the gudgeon 23, but at the position of arm 20, shown in Figure 1, the gudgeon 23 is in locked relationship with the rail 7.

On the opposite side of the central member 9, an arm 24 is pivoted at *j* to the discs 19 and at its opposite end, is pivoted at *k* to an arm 25, the latter being, in turn, pivoted at *l* to a cross member 26. The lower end of arm 25 is pivoted to the gudgeon, identified by the character 23 to correspond with its companion gudgeon bearing the same reference character.

The discs 19 are provided with handles 27 to enable them to be easily rotated to effect movement of the several arms, which in turn actuate the gudgeons 23 to locked and unlocked relationship with their respective rails 7.

The discs 19 have the additional function of actuating the pin 28 vertically in the lower portion of the tubular member 9. This action is brought about by a link 29, pivoted at one end to the discs, adjacent their peripheries and at

its opposite end to the upper end of the pin 28. Accordingly, when the discs are rotated, this pin 28 is moved simultaneously with the gudgeons 23 and at the same speed and with the same degree of displacement.

It is immediately apparent therefore that by the simple manipulation of the discs or locking means 19 by its handles 27, the gate may be locked at three points simultaneously, that is, to the two lower rails 7 and to the base rail 8, thereby insuring against displacement of the gate at any time while it is operatively serving as a partitioning medium for the shipments in a box car.

The locking means described in the foregoing not only serves to lock the gates in operative position but also in the inoperative position shown in Figure 3. In this position, the gate is suspended in the top of the car in a manner similar to that in which it is locked in operative position. A permanent block 30 (Figures 1 and 3), having an aperture 31 therein to receive the gudgeons 23, is secured between the flanges of the channel rails 5. As many pairs of these blocks as there are gates are provided to retain the gates inoperatively in the top of the car.

In order to prevent damage either to the shipment or the gates, the latter are provided with yielding suspension means in the form of torsion springs 32, shown in detail in Figures 3, 5 and 8. These springs are wound on pins 33 secured to and extending outwardly from the journal blocks 12. One end of each spring is hooked under a vertical member 9 of the gate on either side thereof, while the opposite end of the spring is fixed in the journal block, as shown in Figures 5 and 8. Being thus mounted, the springs sustain the gates at the approximate angle shown in Figure 3 in dotted lines, to prevent them from colliding with the shipment, should they be permitted to fall under their own weight. In order to effect securement of the gates in vertical or operative position they are required to be pushed into position to overcome the resistance of the sustaining springs 32, and then blocked, as explained.

When it is desired to employ one or more of the gates described, the operator is required to simply release the locks by rotating the locking means or eccentric 19 to manipulate the arms 20, 21, 24 and 25 to release the gudgeons from the aperture 31 of the block 30. If the intermediate latches (Figure 7) are secured, then he is required to pull downward on the pin 16 against the spring 17 and simultaneously move the pin 15 to withdraw the gudgeon 14 from its retaining aperture. The gate is thereby released and if allowed to fall, its weight will be sustained by the springs 32. When urged into operative position, the locking means or eccentric 19 is oppositely rotated to engage the gudgeons 23 and pin 28 with the apertures in the rails 7 and 8 respectively to firmly hold the gate in engagement with the shipment. To lock the means 19, a detent 34 is normally urged by a spring into engagement with the periphery of the means 19. A notch 35 (Fig. 2) secures this detent when the gate is in locked position, (Fig. 1) and can be released only by raising the detent by pin 36.

Manifestly, the construction shown and described is capable of considerable modification and such modification as may be considered in keeping with the scope and meaning of the appended claims is also considered within the spirit and intent of the invention.

What is claimed is:

1. In a box car, a partitioning means and frame therefor, the latter comprising channel rails supported in spaced relation with the top of said car and a series of companion rails in parallel relationship with said channel rail, journal blocks slidably mounted in said channel rails in confronting relationship, gates pivotally suspending from said blocks, means for locking said blocks against sliding movement, means for locking said gate in vertical and horizontal positions relative to said rails and torsion springs connected to said blocks and engageable with the sides of said gates for yieldingly suspending the same in a position intermediate said vertical and horizontal positions.
2. A box car including in combination a partitioning means and frame, the latter comprising

relatively parallel perforated rails extending the length of said car along its walls and floor, supporting means for said rails, said partitioning means comprising a series of transverse bulkhead gates, each gate having retractable gudgeons for pivotally connecting said gate to slidable blocks mounted in the uppermost of said rails, means to effect sliding movement of said gudgeons to effect a retracting or extending operation of said gudgeons into unlocked or locked relationship with said perforated rails to enable said gate to be displaced or to be locked, a series of longitudinally slidable pins on either side and bottom of said gate, a common means for sliding said pins simultaneously to lock or unlock said gate with respect to companion rails.

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