Dec. 31, 1929. G. A. HULL 1,741,630

REFRIGERATOR CAR

Filed Jan. 19, 1927 2 Sheets-Sheet 1

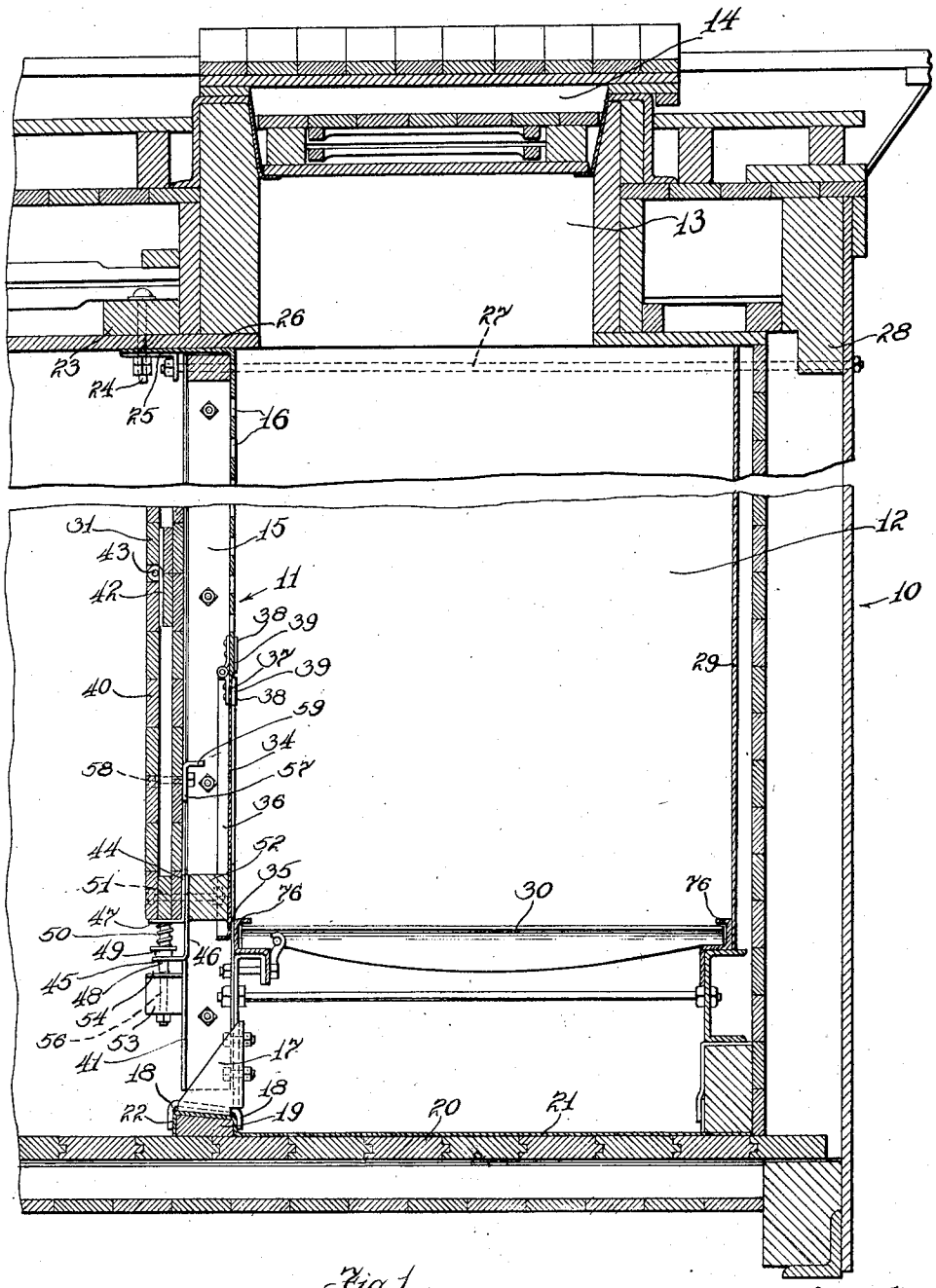


Fig. 1.

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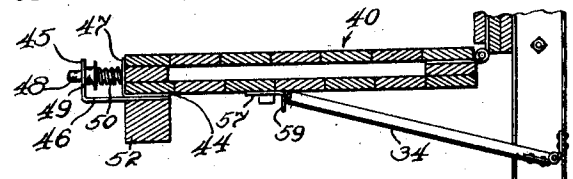


Fig. 3.

Fig. 2.

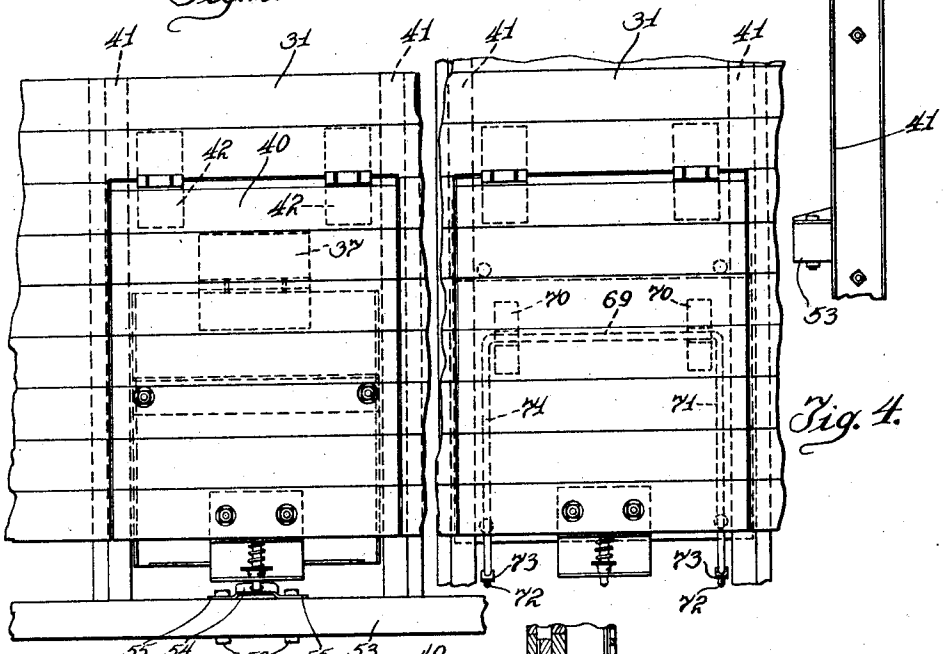


Fig. 4.

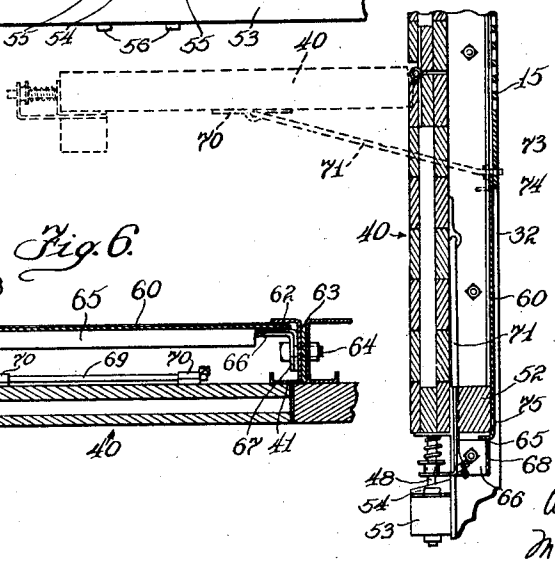


Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE

GEORGE A. HULL, OF CHICAGO, ILLINOIS, ASSIGNOR TO EQUIPMENT SPECIALTIES CO., OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

REFRIGERATOR CAR

Application filed January 19, 1927. Serial No. 162,001.

My invention relates to improvements in refrigerator cars, more particularly to improvements in closures for doors in bulkheads of refrigerator cars to permit access to the ice compartment from the interior of the refrigerator car. When a refrigerator car of the type shown is loaded with perishable freight, the ice compartment is customarily filled with ice by means of a door in the roof of the car in order to lower the temperature of the car and maintain the temperature at such a point as will insure the shipment from deterioration. During certain seasons of the year, and also when the car is pressed into service where refrigeration is not required or desirable, it is necessary to remove the ice from the ice compartment, and with many shipments refrigeration is not only not required, but moisture in the car may be a detriment to the commodities shipped.

In the refrigerators of the prior art, it is necessary to remove ice from the car through the hatchways in the ceiling. The method usually employed is that one man in the ice compartment fills a bucket with ice and hands it up to another man on the roof of the car who empties the bucket by throwing the ice from the top of the car. But this method is costly, slow and hazardous.

One of the objects of my invention is the elimination of the difficulties incident to the removal of ice from the ice compartment.

Another object of my invention is the provision of a bulkhead having an opening therein and a plurality of interlocking closures for said opening.

Another object of my invention is the provision of a plurality of closures co-operating with each other to hold each other in open position.

Another object of my invention is the provision of a plurality of closures for an ice compartment, together with locking means for said closures inaccessible from said ice compartment, and means cooperating between said closures to lock them both in closed position when said latching means is latched.

Other objects and advantages of my invention will appear more fully from the following description and the accompanying drawings, in which similar characters of reference indicate similar parts throughout the several views.

In the drawings,

Figure 1 is a cross sectional elevational view taken lengthwise through a refrigerator car showing the ice compartment in one end of said car.

Figure 2 is an elevational view of the bulkhead closures shown in Figure 1 in closed position.

Figure 3 is a cross sectional view of the doors of Figures 1 and 2 in open position.

Figure 4 is an elevational view of a modified form of closure.

Figure 5 is a cross sectional view of the same doors as Figure 4, showing the open position in dotted lines, and

Figure 6 is a plan view in cross section of portions of the bulkhead, showing the modified door of Figures 4 and 5.

Referring to Figure 1, 10 indicates in its entirety, the refrigerator car, and 11 indicates in its entirety a bulkhead in one end of the refrigerator car, forming therein an ice compartment 12. The ice compartment 12 is provided in its ceiling with a hatchway 13 having a closure 14, and the hatchway 13 is customarily opened by lifting the cover 14 when access is desired to the interior of the ice compartment 12 for loading ice or for other operations.

The bulkhead 11 comprises a plurality of channeled sections 15 having a plurality of apertures 16, the said sections being bolted together as shown in Figure 6 to form a metal partition extending across the refrigerator car. The bulkhead sections 15 are supported by means of a plurality of metal shoes 17 having integral ears 18 adapted to receive a floor plate 19 further to be described. The floor 20 of the car is covered with a sheet metal plate 21 having one end 22 formed with a channel to receive the wooden floor plate 19 and the plate 21 is fixed to the floor by any convenient fastening means.

At its upper end the bulkhead 11 is secured to the beams 23 of the car by means of a plurality of bolts 24 and a flanged right angled

plate 25 fixed to the beams 23 and the bulkhead 11. The metal sections 15 of the bulkhead 11 may also be flanged at right angles as at 26 to fit against the ceiling of the car, and likewise be secured by the bolts 24. In order to further reinforce and support the bulkhead 15, there may be provided a plurality of rods 27 extending through the right angled flange 25 of the bulkhead 11 across the top of the ice compartment through the wall 28 of the car.

The other sides of the ice compartment are likewise lined with sheet metal as at 29, and the ice is supported upon a grating 30, comprising a plurality of spaced grating members supported in slides 76 upon the car wall 28 and the bulkhead 11, respectively. It will be observed that as the hatchway 14 is customarily left unlocked, the bulkhead 11 and grating 30 are provided with fastening means, all of which are inaccessible from the interior of the ice compartment, in order to prevent access to the interior of the car through the ice compartment, and to make the car pilfer-proof.

The bulkhead 11 is also provided with a wooden wall 31 which may be bolted or otherwise secured to the sheet metal sections of the bulkhead 11 extending from approximately the height of the grating 30 to a point near the top of the bulkhead in order to form a wooden wall for the refrigerator car proper, but to permit the circulation of air through the apertures 16 of the metal bulkhead sections and between the feet 17 at the lower end of the bulkhead to the ice compartment 12.

The complete details of the ice compartment construction are disclosed in my copending application, Serial No. 86,714, filed February 8, 1926, now Patent No. 1,690,412 dated Nov. 6, 1928, for Grate construction of ice compartments of refrigerator cars, and the exact details of the ice compartment construction are not important, except as they co-operate with the features of the present invention. In order to obviate the difficulties of removing the ice from the hatchway 13, I provide one of the metal bulkhead sections 15 with an aperture 32 for the purpose of permitting the unloading of the ice through the refrigerator car. Likewise the wooden wall section 31 is provided with an aligning aperture 33, the bases of both said apertures being approximately at the floor of the ice compartment, which consists of the grating 30. The aperture 32 is provided with a closure 34, consisting of a metal plate of substantially the same shape as said aperture but slightly larger in order to overlap at the side edges and the base of the aperture 32 as at 35. In order to reinforce the closure 34 the outward edge of said closure may be flanged as at 36, the flange 36 extending about three sides of the closure 34 or it may also extend across the top edge, being cut away at the points of attachment of the hinges 37. The closure 34 may be supported at its upper edge upon the metal section 15 by means of a plurality of hinges 37, comprising any form of metal hinge which may be secured to the closure 34 and the metal section 15 by a plurality of rivets 38. In order to reinforce the wall at the rivets, I prefer to provide rivet plates 39 of substantially the same area as the hinge 37 through which the rivets 38 may be passed and be riveted upon the inside of the metal plate.

The aperture 33 in the wooden wall is also provided with a closure 40 consisting of a wooden door which may be of a single piece of lumber, but which is preferably built up of a plurality of boards forming a door 40 of the same thickness as the wall 31 and of a size and shape capable of closing the aperture 33. While the doors and their apertures are preferably made of rectangular shape, they may obviously be made of any other shape, provided they are capable of being pivotally mounted as shown in the drawings. The door 40 is pivotally supported upon the wall 31. In order to provide a simple, efficacious method of furnishing door stops for the door 40, I prefer to make the aperture 33 of such width that the lateral edges of the door 40 may rest upon the flanges 41 of the steel section 15 of the bulkhead wall 11. The hinges 42 may be any ordinary type of sturdy door hinge, preferably disposed as shown in Figure 1 with the hinge pivot 43 in a groove between the edges of the wall 31 and the door 40 flush with the surface of the wall and door. The door 40 is provided at its lower edge with an angle iron 44 and a similar angle iron 45 having a wider angular flange 46 thereby providing two spaced flanges 47 and 45 parallel to the base of the door. The flanges 45 and 47 are provided with aligned apertures to receive a bolt 48 extending through both flanges and having a shoulder 49 above the flange 45 and a compression spring 50 tensioned between the shoulder 49 and the flange 47 in such manner that the bolt 48 is resiliently urged downward against the flange 45. The angle iron members 44 and 46 may be supported upon the door 40 in any convenient manner, but I prefer to support the same by means of a plurality of bolts 51 extending through the said angle irons, the door 40 and through a wooden cross beam 52 upon the back of the door 40, clamping all of these members together. The bolts 51 are preferably countersunk in both the door and the cross beam 52 in order to provide a more finished appearance and to eliminate projections on both sides of these members.

The steel bulkhead sections 15 support at a point directly below the lower edge of the door and parallel to the said edge, a cross beam 53 by means of a plurality of bolts passing through the flanges 41 and the cross beam

53 is provided at a point opposite the bolt 48 with a latch 54 comprising a sloping U-shaped member having outwardly turned feet 55 by means of which it is secured to the cross beam 53 with bolts 56. The latching member 54 is provided with an aperture adapted to receive the bolt 48 when the door 40 is in closed position against the flanges 41 and the sloping surface of the latching member 54 is adapted to cam the bolt 48 upward during the closing motion of the door 40, thereby providing a self-latching means for the door 40.

The steel door 34 and the aperture 32 are preferably smaller than the opening 33 and the door 40, the door 34 being of such width that in its pivotal movement it may clear the flanges 41 and in order to provide for the convenient removal of ice from the ice compartment 12, the doors 32 and 33 have their lower edges substantially at the level of the gating 30, but the steel door 34 is of less height than the wooden door for a purpose further to be explained. When the doors are in closed position as in Figure 1, the steel door 34 rests against the edges of the aperture 32 in the steel section upon three sides and the cross beam 52 is of such thickness and length that it may bear against the steel door 34 and hold the same in closed position when the bolt 48 is latched in the latching member 54. As the bolt 49 is only accessible from the interior of the car, it will thus be observed that I have provided a self-latching means for locking both doors in closed position, which is inaccessible from the ice compartment, thus making the car pilfer-proof. The wooden door 40 is also provided at its rear side with a piece of angle iron 57 conveniently secured to the door parallel to the pivots of the door by means of a plurality of bolts 58, the angle iron 57 having an outwardly extending flange 59 parallel to the axis of the pivots of the door 40. The flange 59 is so located upon the door 40 that when the door 40 is in open position as shown in Figure 3, the steel door 34 may be swung to open position beneath the door 40, the lower edge of the door 34 engaging behind the flange 59 so that the door 34 supports the door 40 in open position and the door 34 is likewise supported in open position by its engagement with the flange 59 on the door 40. In order to best support these doors in open position, I prefer to locate the pivotal point of the steel door 34 and the upper edge of its opening slightly below the pivotal point of the wooden door, in order that the door 34 may act as a brace for the door 40. While the door 40 is shown supported in substantially horizontal position, it is obvious that the position of these doors may be varied when open by the location of the flange 59, through a wide range of angles, and I do not limit myself to any specific position of the doors. As the flange 59 may be made of equal length with the door 40, it will be observed that I have provided a very sturdy and cheap construction for locking these doors in open position as well as locking the doors in closed position.

Referring to Figures 4, 5 and 6, I have here shown a modification in which the steel door 60 is supported for sliding movement instead of pivotal movement. The steel section 15 of the bulkhead 11 may in this modification be provided with an aperture 33, and in order to slidably support the door 60, I provide a steel section 15 with angle iron members 61 extending up each side of the channels 63, the angle irons 61 being provided with spaced flanges 62 and the angle irons 61 may be supported upon the channel members 63 by the bolts 64. The door 60 may consist of a plane sheet of metal having an inwardly turned flange 65 at its bottom and the door 60 is disposed between the steel section 15 and the flanges 62 to slide vertically between the same. In order to support the door 60 in closed position, I provide a stop member 66 consisting of a strip of sheet metal having inwardly turned ends 67 preferably secured within the channels 63 at each end of the member 66 by means of the bolts 64 which also support the angle iron guides 62, and when the door 60 is in its closed position the flange 65 rests upon the web 68 of the stop 66.

The door 40 in this modification may be of similar construction to that previously disclosed having a cross beam 52 which is adapted to bear against the door 60 just above the flange 65 when both doors are in closed position and the door 40 is latched by means of the bolt 48 extending into the latching member 54 on the cross beam 53. When the door 40 is thus held in latched position the door 60 is prevented from being opened by sliding movement by the flange 65 being locked below the cross beam 52.

In order to support the door 40 in open position, as well as the door 60, the door 40 is provided with a brace rod 69 comprising a substantially U-shaped rod, the U being of slightly less width than the width of the door 40 and being supported at a plurality of points at its yoke for pivotal movement upon the door 40 by means of stirrups 70 preferably of sheet metal and which may be secured to the door by bolts or any convenient fastening means. The legs 71 of the brace rod 69 are preferably threaded at their ends 72 and each provided with a nut 73 located a short distance from the ends 72 of the legs, and the legs 71 are preferably bent upward at a slight angle behind the nuts 73 for a purpose further to be described.

In order that the brace 69 may not interfere with the door in closed position, the cross beam 52 may be provided with grooves to receive the legs 71 so that the legs 71 may hang downward against the door 40 between the said door and the door 61 when in closed

position, as shown in Figure 5. The steel wall 15 of the bulkhead is provided with a pair of apertures 74 located immediately above the opening 32 in the steel wall, and the door 60 is likewise provided with a pair of apertures 75 located immediately above the flange 65 in the door 60, the apertures 75 aligning with the apertures 74 when the door 60 is slid to open position, in such manner that when the door 60 is in open position and the door 40 is in open position as shown in Figure 5, the ends 72 of the brace rod may be passed through the apertures 75 in the door 60 into the apertures 74 in the wall 15 until nuts 73 bear against the door 60. It will now be observed that as the ends 72 are bent slightly upward behind the nuts 73, this provides for alignment between the surface of the nuts 73 and the door 60, so that these nuts may bear flatly against the door when the legs 71 are in the position shown in Figure 5. The brace rod 69 should be of such length and location that the door 40 will be held in open position when the ends 72 are supporting the door 60 in open position, and it is obvious that the door 40 may be supported in a great number of positions.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, it is capable of many modifications without departing from the spirit of the invention, and I do not wish to be limited to the precise details of construction set forth, but desire to avail myself of all else within the scope of the appended claims.

I claim:

1. In a refrigerator car, a bulkhead forming an ice compartment therein and having an opening in said bulkhead, a metal closure for said opening, an interlocking wooden closure for said opening, means on said wooden closure to hold both said closures in open position, and means on said wooden closure to lock both said closures in closed position.

2. In a closure for refrigerator cars, a supporting wall having an opening therein, a metal closure for closing said opening, a wooden closure for closing said opening, and common latching means to lock both said closures in closed position.

3. In a refrigerator car, a bulkhead comprising a metal wall and a wooden wall, forming an ice compartment in said car, said bulkhead having a door opening therein, and a plurality of closures each of which is adapted to close said opening, comprising a metal closure and a wooden closure, and common means for latching both said closures in closed position.

4. In a refrigerator car, a bulkhead comprising a metal wall, a wooden wall forming an ice compartment in said car, said bulkhead having a door opening therein, and a plurality of closures for said door, comprising a metal closure and a wooden closure each of said closures being adapted to close said opening, and common means for latching both said closures in closed position, said latching means being inaccessible from said ice compartment.

5. In a refrigerator car, a bulkhead comprising a metal wall, a wooden wall forming an ice compartment in said car, said bulkhead having a door opening therein, and a plurality of closures each of which is adapted to close said opening, comprising a metal closure and a wooden closure, common means for latching both said closures in closed position, and common means for holding both said closures in open position.

6. In a refrigerator car, a wall comprising a metal section and a wooden section, said wall having a door opening therein, a wooden closure pivoted on said wooden section, and a metal closure pivoted on said metal section, and a shoulder on said wooden closure cooperating to hold both doors in open position.

7. In a refrigerator car, a wall comprising a metal section and a wooden section, said wall having a door opening therein, a wooden closure pivoted on said wooden section, and a metal closure pivoted on said metal section, self latching means on said wooden closure and a shoulder on said wooden closure holding said metal closure in closed position when said wooden closure is latched.

8. In a refrigerator car, a bulkhead in said car for forming an ice chamber, the ceiling of said ice compartment having a hatchway therein, an ice supporting member in said ice compartment having ventilation openings, a closure for said hatchway, said bulkhead having an opening therein adjacent the base of said ice compartment and adapted to permit ice to be slid off said member without interference, and a closure for said opening in said bulkhead.

9. In a refrigerator car, a bulkhead in said car for forming an ice chamber, the ceiling of said ice compartment having a hatchway therein, a closure for said hatchway, said bulkhead having an opening therein adjacent the base of said ice compartment, a closure for said opening in said bulkhead and means for holding said closure in open position comprising a second closure for closing the same opening.

10. In a refrigerator car, a bulkhead forming an ice compartment therein and having an opening in said bulkhead, and a pair of closures for said opening, said closures being adapted to interlock to secure each other in open position.

11. In a refrigerator car, a bulkhead having two sections spaced from each other and forming an ice compartment in said car, said bulkhead having an opening through both sections, and a closure for the opening in each section, locking means for one of said

closures and a shoulder on said latter closure for securing the other closure in locked position when said locking means is in locked position.

12. In a refrigerator car, a bulk-head forming an ice compartment therein and having an opening in said bulkhead, a metal closure for said opening, a wooden closure for the same opening and means cooperating with said closures whereby each closure retains the other in open position.

13. In a refrigerator car a bulkhead comprising a channeled metal section, a wooden section secured thereto said metal section and said wooden section being provided with registering openings, a metal closure pivoted to said metal section, a wooden closure pivoted to said wooden section and a bracket carried by said wooden closure in position to engage the end of said metal closure to retain both of said closures in open position.

14. In a refrigerator car a bulkhead comprising a channeled metal section, a wooden section secured thereto said metal section and said wooden section being provided with registering openings, a metal closure pivoted to said metal section, a wooden closure pivoted to said wooden section, a keeper carried by said bulkhead, a self-latching device carried by said wooden closure and a block carried by said wooden closure and adapted to engage said metal closure and hold the same in locked position when said wooden closure is latched in closed position.

15. In a refrigerator car, a bulkhead comprising a metal section, a wooden section carried by said metal section, both of said sections being provided with registering openings, a metal closure pivoted to said metal section, a wooden closure pivoted to said wooden section, a latching plunger carried by said wooden closure, and means carried by one of said closures for engaging the other of said closures, whereby said metal closure is locked when said wooden closure is latched in said closed position.

In witness whereof, I hereunto subscribe my name this 14th day of January, 1927.

GEORGE A. HULL.