

June 7, 1927.

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HATCH COVER OPERATING MEANS FOR REFRIGERATOR CARS

Filed Aug. 20, 1925

4 Sheets-Sheet 1

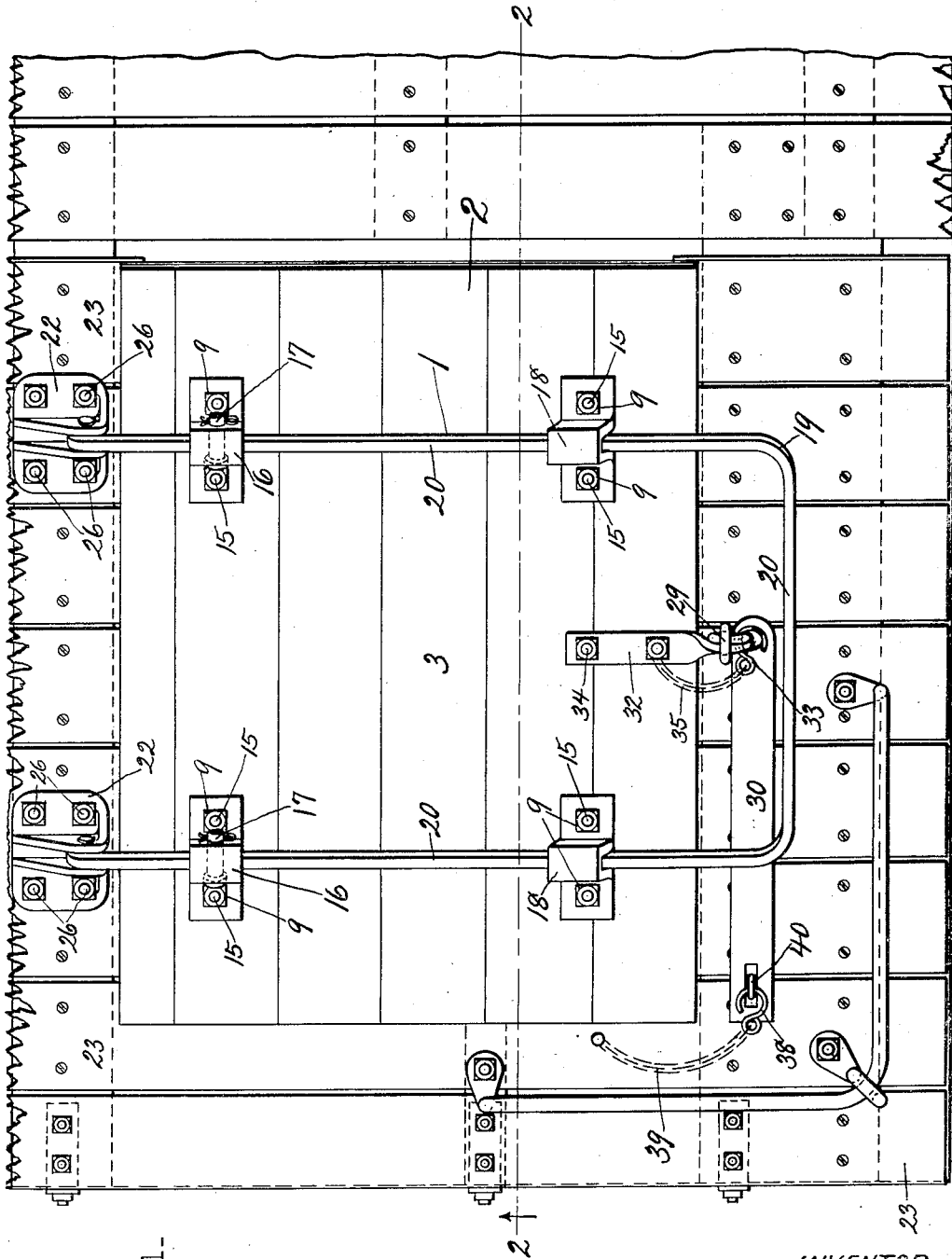


FIG. 1-

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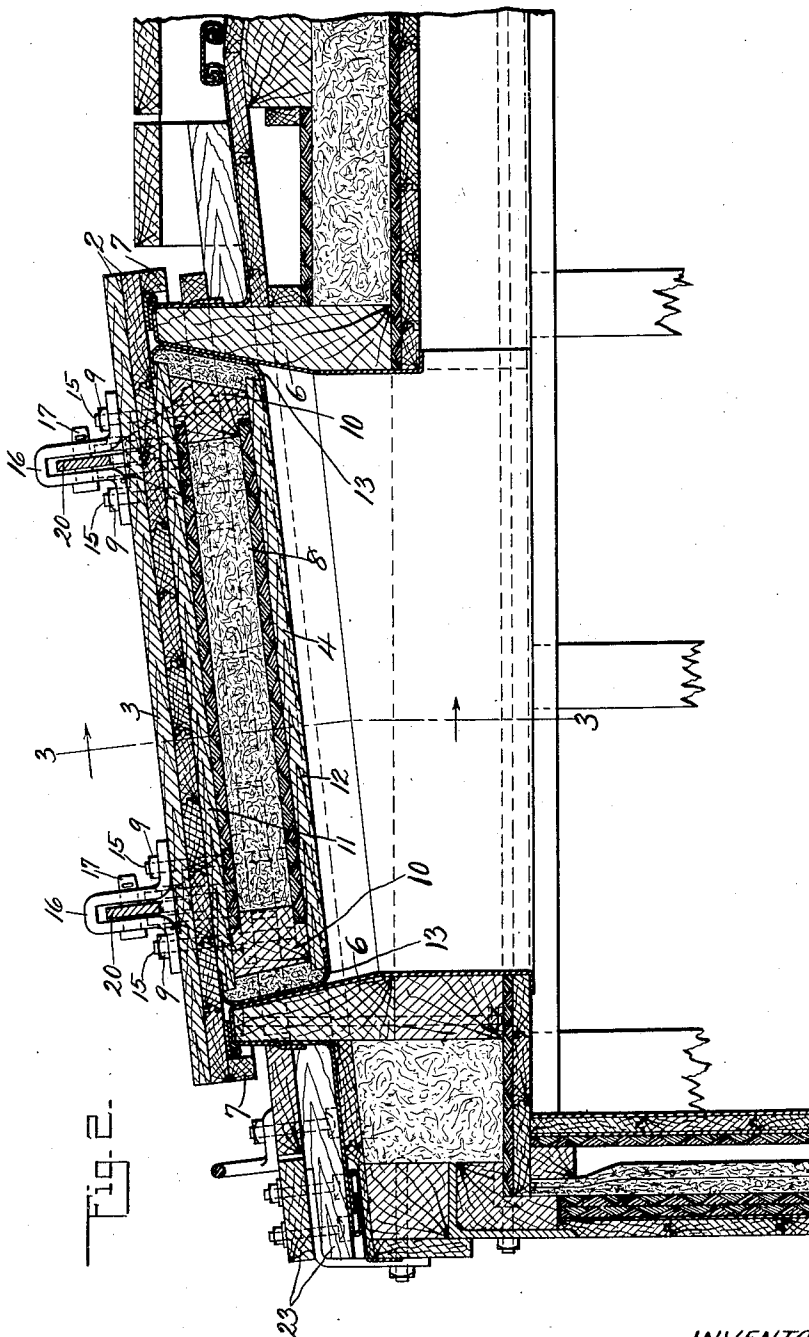
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4 Sheets-Sheet 2



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4 Sheets-Sheet 3

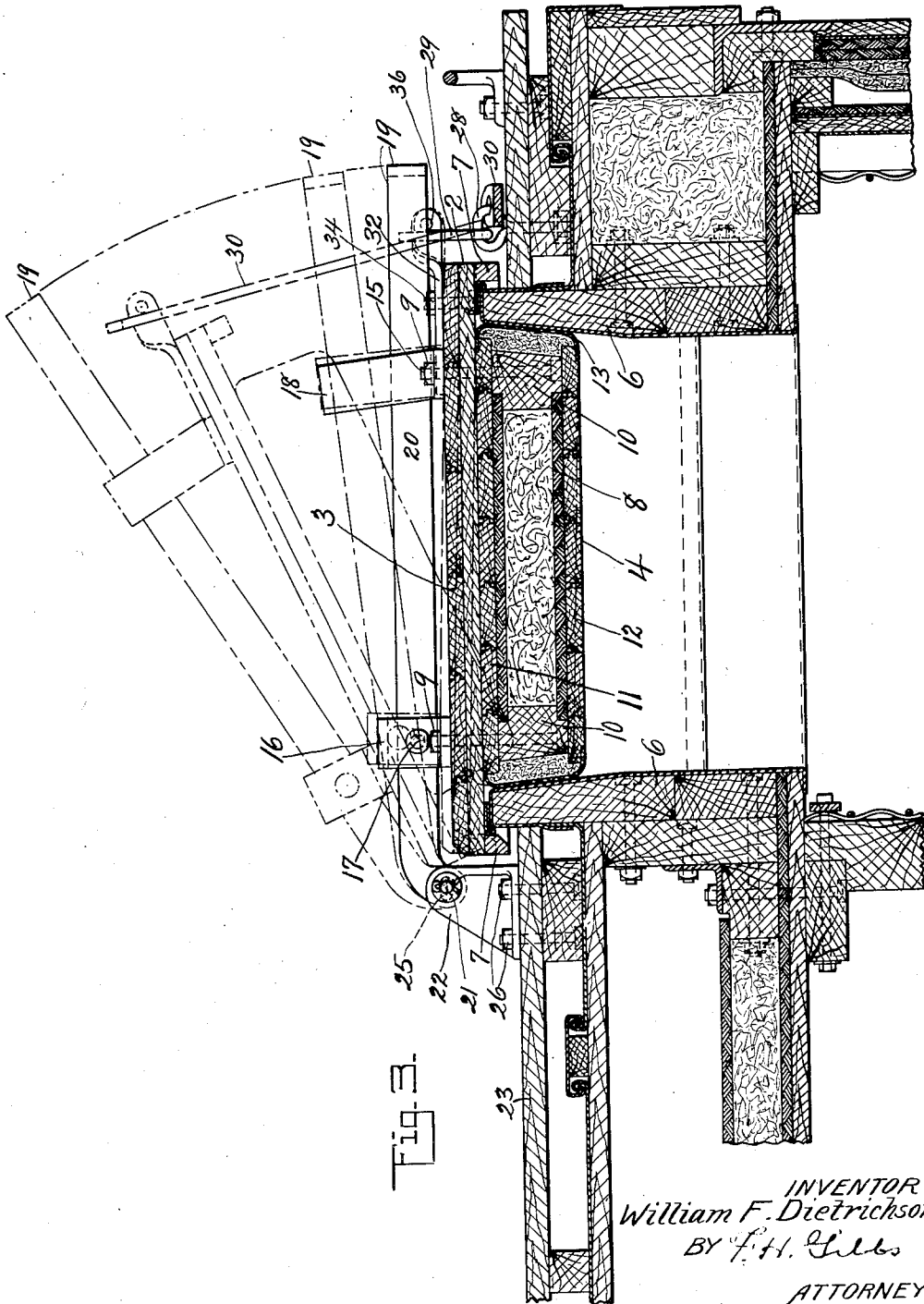


Fig. 3.

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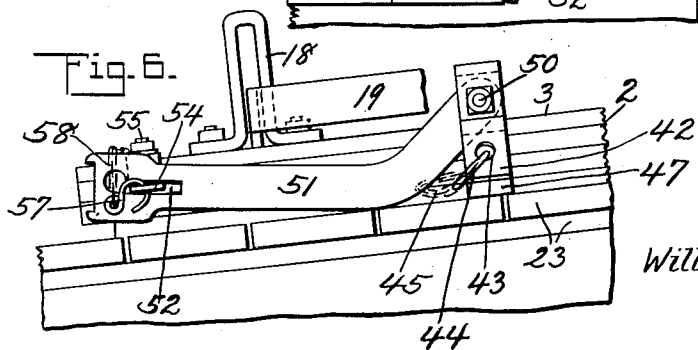
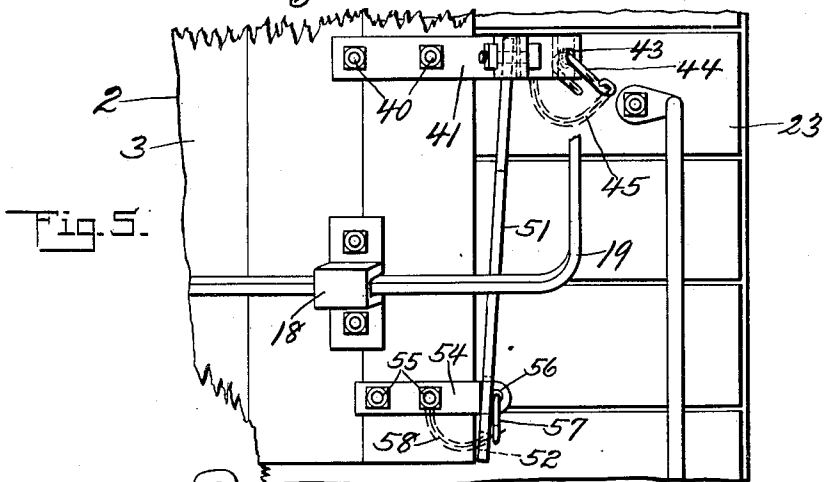
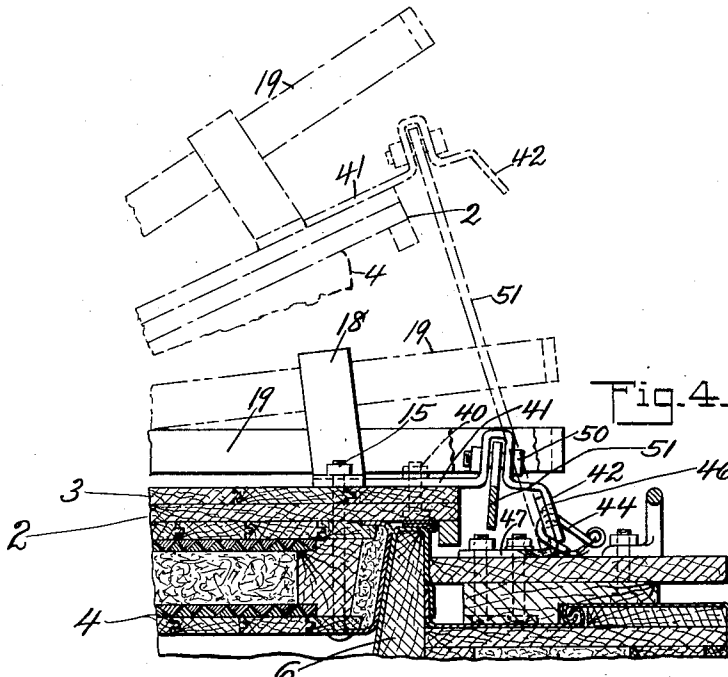
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4 Sheets-Sheet 4



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# UNITED STATES PATENT OFFICE.

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## HATCH-COVER OPERATING MEANS FOR REFRIGERATOR CARS.

Application filed August 20, 1925. Serial No. 51,516.

In the drawings:

Fig. 1 is a top plan view of a refrigerator car hatch plug and cover and lifting means constructed in accordance with this invention;

Fig. 2 is a vertical section taken on the line 2—2 of Fig. 1;

Fig. 3 is a vertical section taken on the line 3—3 of Fig. 2;

Fig. 4 is a partial vertical section of the hatch cover of Fig. 1 equipped with an improved means for holding the cover in position to ventilate the car;

Fig. 5 is a partial top plan view of the hatch cover and ventilator bar of Fig. 4, showing the hatch cover closed and the ventilator bar secured to the hatch cover; and

Fig. 6 is a partial front elevation of the hatch cover and ventilator bar shown positioned as in Fig. 5.

This invention relates to hatch covers for refrigerator cars and it is an object of this invention to provide an improved operating means for such a hatch cover which shall be simple and economical in construction and efficient in use. A further object of this invention is to provide a simple and efficient operating mechanism for a hatch cover which will provide a large lever ratio for raising one edge of the hatch cover from the hatch opening and thereafter raise the hatch cover clear of the hatch opening by a lever arm of smaller ratio, the change from the greater to the lesser ratio being made automatically during the raising of the hatch cover. It is also an object of this invention to provide an improved means for holding the hatch cover in the ventilating position.

In the drawings, the hatch cover raising mechanism 1 is shown applied to a hatch cover 2 comprising a cover portion 3 and a plug portion 4 secured to the cover portion 3 so as to form a unitary structure. The cover portion 3 rests upon the upper edges of the hatch frame members 6 and has a downwardly projecting strip 7 along its edges which forms a frame surrounding the hatch frame members 6. The plug portion 4 is formed of suitable insulating material 8 held in a frame 10 by a top and bottom sheathing 11 and 12, respectively. The sides of the frame 10 are tapered and bound by

a suitable packing and sealing strip 13 which fits the tapered opening formed by the hatch frame members 6. While shown and described in connection with a hatch cover having the plug secured thereto to form a unitary construction, it will be understood that the hatch operating means forming the object of this invention are equally applicable to refrigerator car hatches of other constructions.

The plug portion 4 is secured to the cover portion 3 by bolts 15 which project beyond the cover portion 3 and engage in openings in the outwardly projecting flanges of the inverted U-shape members 16 and 18, the U-shape members being secured to the cover 2 by the nuts 9 threaded on the bolts 15. Mounted in the U-shape members 16 and 18 and pivotally connected to the members 16 by the pins 17 are the side members 20 of a U-shape lever 19, the side members being connected at one end by a cross piece 20 and having their other ends pivotally mounted on pins 21 in the slots 25 of hinge brackets 22 secured to the car roof 23 by bolts 26.

In the construction shown in Figs. 1, 2 and 3 there is secured to the roof 23 an eye 28 to which are secured a short link 29 and a long link 30, each link having at its free end an opening which will receive the projecting end of the member 32 secured to the cover portion 2 by bolts 34. The projecting end of the member 32 is provided with an opening 36 to receive a hook 33, fastened by chain 35 to the car which secures on the member 32 either the long link 30 or the short link 29, the short link 29 being secured thereon to retain the cover 2 in the closed position while the long link 30 is secured thereon to hold the cover in the open position, as shown in dotted lines in Fig. 3, in order to provide ventilation for the interior of the car. The long link 30 is secured to the car by means of a hook 38 on a chain 39 and an eye 40 when the link 30 is not in use holding the cover 2 in raised position.

In operation the cover 2 is raised by grasping the cross piece 20 and raising the lever upwardly which operation, through the connection of the side members 20 with the members 16, will cause the edge of the cover adjacent the hinge brackets 22 to be raised from the upper edge of the hatch

frame members 6, the opposite edge of the cover 2 resting upon the upper edge of the hatch member 6 until the side members 20 engage with the upper portions of the U-shape members 18 as shown in dotted lines in Fig. 3. The lost motion permitted by the depth of the members 18 having thus been taken up completely, they become an effective actuating connection; so that continued operation of the lever 19 will raise the cover and plug clear of the hatch frame members 6. Thus not only does the lever 19 form a hinge to connect the cover 2 to the car, but the variable attachment of the lever to the cover by the parts 16, 16 and 18, 18, etc., results in automatically changing its effective connection and action on the cover.

It will be noted that in the raising operation the lever 19 operates with a greater lever ratio to first raise the edge of the cover adjacent to the hinge brackets thereby providing a means by which the cover may be readily started from the hatch frame members 6. After the cover has been raised along one edge from the hatch frame members the cover is raised in entirety, the lever 19 then operating with a lesser lever ratio whereby the cover will be quickly raised. The slots 25 in the hinge brackets 22 permit of the lever 19 being shifted longitudinally in the opening and closing operations so as to prevent excessive binding of the cover and plug portions 3 and 4, respectively, on the hatch frame members 6.

In the construction shown in Figs. 4, 5 and 6, the hatch cover 2 is provided with the cover lifting lever 19, as in the construction shown in Figs. 1, 2 and 3. To the hatch cover 2 at the center of the cover edge away from the hinge brackets 22, bolts 40 secure a bar 41 which projects beyond the edge of the cover and has its outer end bent downwardly, as at 42, and provided with an opening 43 to receive a hook 44 secured to the car roof 23 by a chain 45 and which, when engaged in the opening 43 and an opening 46 in an angle piece 47 fastened to the car roof by the bolts 48 secures the hatch cover 2 in position to close the hatch opening.

Adjacent the cover 2 the bar 41 is bent upward to form an inverted U-shape portion which projects above the cover 2 and the sides of which are provided with aligned openings receiving a bolt 50 which pivotally supports a bar 51 having an elongated opening 52 adjacent its free end. When the cover 2 is in closed position, as shown in Figs. 4 and 6, the free end of the bar 51 is secured to the cover 2 by means of a bar 54 fastened to the cover 2 by bolts 55 and which has its free end projecting beyond the edge of the cover to engage in the opening 52 and provided with an opening 56 to receive a hook 57 secured to the cover 2 by a chain 58, the hook 57 being engaged in the opening

56 to retain the bar 51 on the bar 54. To hold the cover 2 in the open or ventilating position the bar 51 is secured to the angle piece 47, as shown in dotted lines in Fig. 4, by the hook 44 which is engaged in the opening 52 in the bar 51 and in the opening 46 in the angle piece 47. It will be noted that the bar 51 provides a means for holding the cover 2 in position to ventilate the car and with its free end secured to the cover it does not interfere with the movement of the cover to its full open position, as for icing, etc.

What is claimed is:

1. In a refrigerator car, a hatchway, a cover for said hatchway, and a lever for raising said cover variably connected to the cover and also having a variable hinge connection to the car.
2. In a refrigerator car, a hatchway, a cover for said hatchway, and a lever for raising the cover having a pivotal connection to the car and a variable attachment to the cover, for swinging the cover about two centers with different lever ratios in raising the cover.
3. In a refrigerator car, a hatchway, a cover for said hatchway and a lever connected to the cover for raising first one edge and then the entire cover, said lever forming a hinge to connect said cover to the car.
4. In a refrigerator car, a hatchway, a cover for said hatchway and a lever connected to the cover for raising first one edge and then the entire cover, said lever connecting said cover to the car.
5. In a refrigerator car, a hatchway, a cover for said hatchway and a lever for raising said cover, said lever having a pivotal connection with said cover and a variable hinge connection to the car.
6. In a refrigerator car, a hatchway, a cover for said hatchway, and a lever with pivotal and lost motion attachment to the cover for raising first one edge thereof and then the entire cover, said lever forming a hinge to connect said cover to the car.
7. In a refrigerator car, a hatch cover, a plug fixed thereto and means for raising said plug and cover comprising a lever hinged to the roof of the car and connected to said cover to first raise the cover edge adjacent to the hinges.
8. In a refrigerator car, a hatchway, a cover for said hatchway and means comprising a lever pivotally connected to the cover and mounted on the car for raising the cover, with means for automatically changing the effective connection of the lever to the cover and the effective lever ratio during the raising of the cover.
9. In a refrigerator car, a hatchway, a cover for said hatchway and means for raising said cover comprising a lever hinged to the car and connected to said cover to first raise the cover edge adjacent said hinge with

lever arms having one effective ratio and then raise said cover from said hatchway with lever arms having another effective ratio.

5 10. In a refrigerator car, a hatchway, a cover for said hatchway and means for raising said cover comprising a lever having a connection with said cover for first raising one edge and then the entire cover.

10 11. In a refrigerator car, a hatchway, a cover for said hatchway and means connected to the cover and to the car for first raising one edge of said cover and then raising the entire cover.

15 12. In a refrigerator car, a hatchway, a cover for said hatchway and means comprising a lever hinged to said car and connected to the cover for first raising one edge of said cover and then raising the entire cover.

20 13. In a refrigerator car, a hatchway, a cover for said hatchway, aligned inverted U-shape members secured to said cover and a lever mounted in said U-shape members and pivotally connected to the car and one of  
25 said U-shape members, said lever when raised engaging the other of said U-shape members.

30 14. In a refrigerator car, a hatchway, a cover for said hatchway, aligned inverted U-shape members secured to said cover and a lever mounted in said U-shape members and pivotally connected to the car and one of  
35 said U-shape members, said lever when operated raising one edge of said cover and then engaging the other of said U-shape members.

40 15. In a refrigerator car, a hatchway, a cover for said hatchway, aligned inverted U-shape members secured to said cover and a lever mounted in said U-shape members and pivotally connected to the car, said lever co-  
operating with said U-shape members to first raise one edge of said cover and then the entire cover.

45 16. In a refrigerator car, a hatchway, a cover for said hatchway, a slotted hinge bracket carried by the car, a pin slidably mounted in said slot and a cover operating  
50 lever having a limited movement relative to the cover and fulcrumed on said pin.

17. In a refrigerator car, a hatchway, a cover for said hatchway, an operating lever secured to the car and pivotally connected to said cover for first raising one edge of

said cover, and means on said cover engaged  
55 by said lever to raise the entire cover.

18. A closure operator comprising a manually operable pivoted lever having normal operative and inoperative connections adjacent its ends with a closure whereby upon  
60 rocking the lever in one direction one end of the closure will be actuated to open position and the continued movement of the lever will bodily lift the closure.

19. A closure operator comprising a manually operable lever arranged to extend  
65 transversely across a bodily movable closure with one end pivotally supported, means adapted to be associated with the lever and closure to provide a normal operative connection adjacent the pivoted end of the lever,  
70 and means adapted to engage the lever and closure adjacent the free end of the latter and affording a normally inoperative connection between the lever and closure, and  
75 operable to bodily lift the closure upon moving the lever a predetermined distance.

20. In combination, a closure normally accommodated in a closure opening, and manually operable means having normal operative  
80 and inoperative engagement with the closure whereby, upon actuation of the manually operable means to open the closure, one end will be lifted from the opening and its opposite end subsequently raised.  
85

21. In combination, a railway car having a hatchway and a cover for such hatchway, a pivotally supported lever having pivotal connection with the cover at a point adjacent the pivot connection of the lever and  
90 having slidable connection with the closure at a point remote from the pivot connection between the lever and closure, the slidable connection between the lever and closure affording means for bodily lifting the cover  
95 upon actuation of the lever in one direction and after the lever has been moved a predetermined distance.

22. In a refrigerator car, a hatchway, a cover for said hatchway, and a single operating lever connected to the car and pivotally connected to said cover for first raising that edge of said cover nearest the pivot point of the lever, and continued movement  
100 of the lever will bodily lift the closure. 105

In testimony whereof I have hereunto set my hand.

WILLIAM F. DIETRICHSON.