

Dec. 29, 1925.

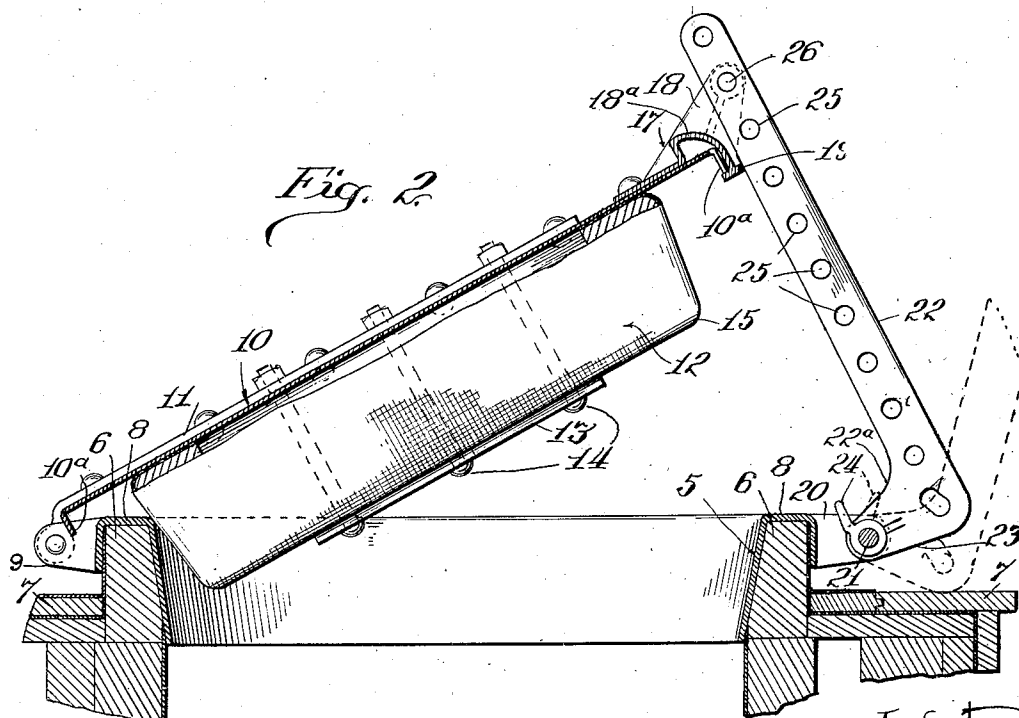
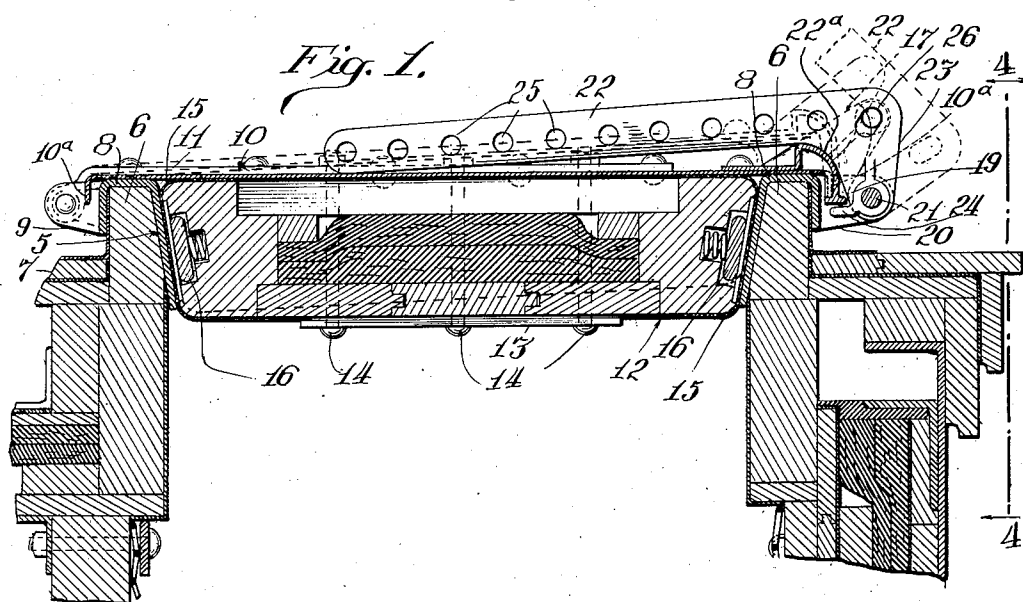
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K. F. NYSTROM

REFRIGERATOR CAR HATCH CLOSURE

Filed April 6, 1923

2 Sheets-Sheet 1



Witnesses
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2 Sheets-Sheet 2

Fig. 3.

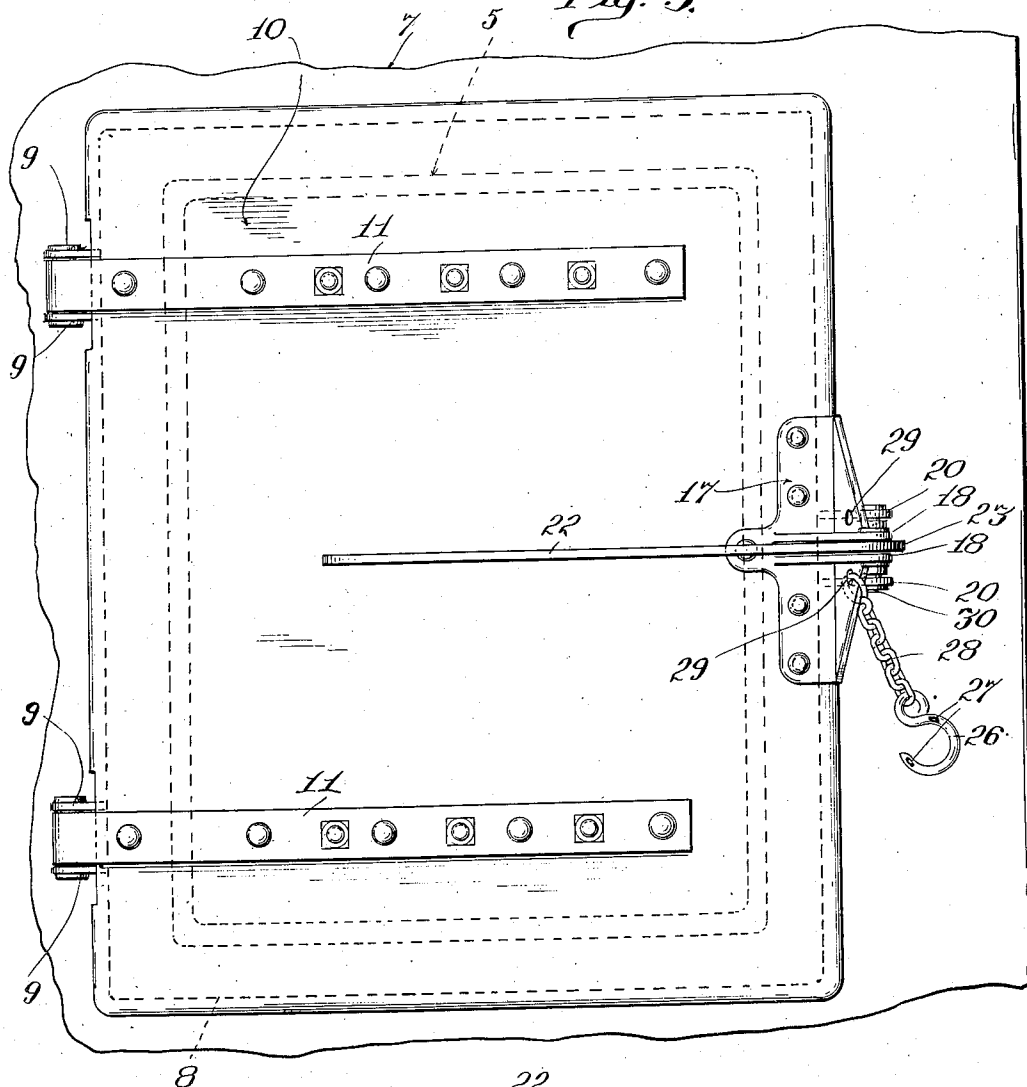
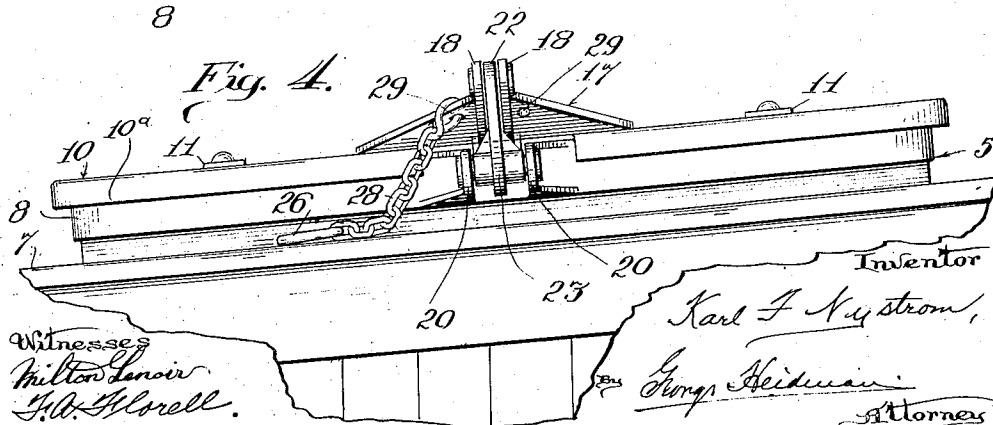


Fig. 4.



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UNITED STATES PATENT OFFICE.

KARL F. NYSTROM, OF CHICAGO, ILLINOIS.

REFRIGERATOR-CAR HATCH CLOSURE.

Application filed April 6, 1923. Serial No. 630,199.

To all whom it may concern:

Be it known that I, KARL F. NYSTROM, a subject of Great Britain, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Refrigerator-Car Hatch Closures, of which the following is a description, reference being had to the accompanying drawing, which forms a part of my specification.

My invention relates more particularly to an improved refrigerator car hatch cover and plug and the means for controlling the cover, whereby the latter will be forced into tight sealing position; while at the same time providing means whereby a fulcrum is provided for forcing the hatch cover upwardly into uncovering position when it is desired to open the hatch.

One object of the invention is to provide cover controlling means of such construction that movement of the cover controlling means toward releasing position will also force the cover and plug into partly open position and thus obviate the usual practice of or necessity for battering or prying the cover plug in order to release the latter from the hatch.

Another object of my invention is to provide a hatch cover and operating lever so correlated that movement of the lever into sealing or locking position will force the cover or plug into tight closing or sealing position.

A further object of my invention is to provide an operating lever which, in addition to its functions hereinbefore recited, will also constitute means whereby the cover may be secured in partial open or ventilating positions; while at the same time affording means whereby the cover and lever may be sealed when closed through the use of a proper sealing element.

The various objects hereinbefore enumerated, as well as other objects and advantages, will all be more fully comprehended from the following detailed description of the accompanying drawings which form a part of my specification and wherein:—

Figure 1 is a sectional elevation of a refrigerator car hatch and my improved cover and operating means, shown in closed position; while a partially open position of the mechanism is shown in dotted lines with portions broken away.

Figure 2 is a sectional view of the hatch

with the plug and operating lever connections in elevation and the cover and operating lever shown in partially open position.

Figure 3 is a plan view of my hatch closure, with the cover and operating lever in closed position.

Figure 4 is an elevation taken substantially on the line 4—4 of Figure 1, looking in the direction of the arrows.

In the particular embodiment of the invention as illustrated in the drawings wherein a hatch of a refrigerator car is shown, the hatch opening is provided with a continuous metallic frame 5, which covers the entire inner side of the hatch timbers or planks 6 which extend somewhat above the car-roof proper 7. The timbers or planks 6 and the casting or frame 5 are preferably provided with an inward bevel or slope so as to converge downwardly and thus slightly and gradually reduce the hatch opening to the ice compartment.

The casting or metallic frame 5 is flanged at the top outwardly and downwardly so as to overlap and more or less encase the upper edge of the hatch planks 6 as shown at 8; the frame being suitably bolted or secured to the timbers. The outer leg of the flange portion 8 of the frame 5, at one side of the hatch, is provided with a suitable number of preferably integral hinge-butts 9 to which the cover 10 is hingedly secured by means of the hinge-straps 11 (a pair for each cover being preferably employed) so as to permit the cover with its plug 12 to be swung upwardly and away from the hatch opening. The plug 12, which may be of the usual construction, composed of planks and suitable insulating material, is firmly secured to the metallic cover 10 by means of a plate 13 and bolts 14, to constitute a single or integral unit; the sides of the plug 12 being covered with suitable fabric as at 15. The sides of the body portion of the plug are provided with spring controlled pads 16, whereby a substantially air-tight joint between the plug and metallic frame 5 is provided. As the plug proper may be of well known construction, a further detailed description thereof need not be entered into.

The opposite or unhinged side of the cover plate 10 is provided with a lever guide 17, comprising a metallic member, the base portion whereof is preferably riveted or otherwise firmly secured to an intermediate point on the cover, see Figure 3, with a portion ex-

tending at an outward inclination to provide the parallel, spaced lobes 18, having registering apertures at the upper ends; the lobes being reenforced by the intermediate rib portion 18^a. The guide member 17 is also formed to extend downwardly beyond the edge of the cover and provide a lever engaging foot portion as at 19 adapted to extend below the top of the hatch timbers and frame to a predetermined extent when the cover is in closed position as shown in Figure 1.

The hatch frame 5 at the free end of the cover and plug, at an intermediate point, is provided with a pair of spaced lobes or ears 20, preferably integral with the casting or frame 5 at points coincident with the spaced lobes 18 of the lever guide 17. These lobes or ears 20 are apertured to receive a pivot pin 21 for a hatch operating lever 22. The lever 22, which is somewhat in the nature of a bell-crank lever, has its end enlarged or angularly formed as shown at 23 to come between the spaced lobes or ears 20 and apertured for the passage of the pivot pin 21. The end of the lever 22 on the side of the pivot pin 21 toward the latch and immediately under the toe 19 is provided with a projection or toe 24 preferably extending substantially at right angles to the angularly disposed end 23 of the lever 22.

The pivot or fulcrum point 21 of the lever and the projection or toe 24 are so correlated that the toe 24 will be disposed substantially parallel with and immediately beneath the foot portion 19 of the lever guide member 17 secured to the cover plate 10, when in closed position.

The downwardly disposed portion of the guide member 17, namely the foot portion 19, is adapted to extend between the lobes or ears 20 and to be disposed between the pivotal point 21 of the lever and the adjacent side of the hatch, as shown in full lines in Figure 1; the foot portion being shown as a continuation of the arcuate rib portion 18^a intermediate of and preferably integral with the spaced lobes 18 of member 17. The arcuate surface of rib 18^a corresponds substantially with and is positioned to be engaged by the curved portion 22^a of lever 22. By reason of this arrangement and construction, it is evident that when lever 22 is swung downwardly into sealing or complete closing position as shown in full lines in Figure 1, the curvature 22^a of the lever will engage with the arcuate rib 18^a and thereby force the cover and plug into complete closed position and air-tight relation with the hatch frame; the lever thus also constituting means for forcing the cover and plug into proper closing position.

It is also apparent from this construction that when lever 22 is swung upwardly, while the cover and plug are in closed position,

the projection or toe 24 will bear upwardly beneath the foot portion 19 of the member 17 and as a result force the cover and plug upwardly out of the hatch opening; the lever providing the necessary leverage or power for easily raising the cover and plug and thus obviating the necessity for employing separate means as a bar for prying the cover and plug loose, as is the case with constructions at present in use.

The lever 22, at spaced intervals apart, is provided with a number of apertures as at 25, with the aperture at the bend in the bell-crank lever 22 preferably being made slightly larger in the nature of a slot. The various apertures in the lever are intended to receive suitable sealing means, such as a pin or preferably a sealing hook 26, adapted to pass through the apertures in the ends of the lobes 18 of the lever guide member 17 secured to the cover, and the aperture in the lever which has been brought into register with the apertures in the lobes 18; the lever being disposed between the spaced lobes 18 and firmly held against lateral play or movement.

The sealing hook 26 is shown provided with openings 27, 27, adapted to receive suitable sealing means; the hook 26 being preferably secured by means of a chain or other suitable flexible element 28, to the lever guide member or plate 17, the upwardly inclining portion whereof is provided with a pair of apertures at 29, for the purpose of receiving a link or hook member 30.

With this arrangement, the cover and sealing pin or hook constitute a unit, thus not only preventing loss or displacement of the sealing hook, but also enabling the hook 26 to be used for locking the cover and lever in any adjusted or raised position, as shown for example in Figure 2.

The construction and mounting of the lever 22 is such that when the lever 22 is swung back or outwardly into complete open position as partially shown in dotted lines in Figure 2, the projection or toe 24 thereof will be disposed as shown in dotted lines where it will be out of the path of the descending cover and possibility of injury to the operator prevented in the event that the cover is accidentally or thoughtlessly released or permitted to drop without properly positioning and holding the lever.

With my improved construction, where a single piece metallic frame is employed for the hatch opening which not only protects the hatch timbers, but in which the hinge-buts for the cover and the operating lever holding brackets or lugs are preferably formed integral with the frame, it is apparent that the frame may be secured to the comparatively large hatch timbers and separate fastenings for the frame, hinge-buts and lever mounting obviated; while at the same time the fastening of the frame to the

timbers also eliminates the necessity for penetrating the roof sheathing and insulation, as has heretofore been the case.

The cover plate 10 is preferably provided with the downwardly disposed flanges 10^a as shown, so as to depend about the sides beneath the top of the hatch frame 5, to provide a weather-shedding construction, which will prevent the joint between the cover and hatch frame or timbers becoming filled with snow and sleet and therefore eliminates possibility of the cover freezing in closed position; my improved cover plate providing a weather shedding construction.

I have shown what I believe to be the simplest embodiment of my invention, which has been described in terms employed merely as terms of description and not of limitation, as structural modifications may be made without, however, departing from the spirit of my invention.

What I claim is:—

1. In a railway refrigerator car provided with a hatch opening, a metallic frame for said opening provided with hinge-buttocks on one side thereof and with a lever-supporting bracket on the other side thereof, a combined cover and plug hingedly secured at one end to said hinge-buttocks while the opposite end is provided with a depending projection, and a lever pivotally secured to said bracket, with a portion of said lever adapted to engage with said depending projection when said lever is swung into cover opening position.

2. In a railway refrigerator car provided with a hatch opening, a metallic frame for said opening, a metallic cover hingedly secured to said frame, a plug in juxtaposition with and rigidly secured to said cover, and an operating lever pivoted to said frame on the side opposite to said hinged connections of the cover and adapted to swing vertically and transversely of the cover when in closing position, a portion of said lever extending to the opposite side of the pivotal point thereof and adapted to engage beneath the edge of the cover when the lever is swung toward opening position and thereby force said cover and plug upwardly.

3. In a railway refrigerator car provided with a hatch opening, a combined cover and plug for said opening, a lever guide secured to said cover at the free end thereof, said guide comprising an upwardly disposed portion and a depending toe or portion, and a bell-crank lever pivoted intermediate of its ends so as to have one end swing transversely of the cover and plug when the latter is closed, while the other end is adapted to engage with said depending toe and force the combined cover and plug upward when said lever is swung toward opening position.

4. In a railway refrigerator car provided with a hatch opening, a cover for said open-

ing hingedly secured at one side to swing vertically, while the opposite side of the cover is provided with an overhanging projecting portion disposed beyond the hatch opening, a lever fulcrumed intermediate of its ends adjacent the free side of the cover adapted to have one end engage with said projecting portion of the cover to force the latter upward, and means whereby the lever and cover may be locked together in their adjusted positions.

5. In a railway refrigerator car provided with a hatch opening, a hinged cover for said opening, a pair of upwardly and outwardly sloping apertured lugs on the free end of said cover, an arcuate rib intermediate of said lugs and provided with a portion depending into a plane beneath that of the cover, a lever pivotally secured adjacent to the free end of the cover and adapted to extend between said lugs, the pivoted end of the lever being formed to coact with said arcuate rib when the lever is swung transversely of the cover and thereby force the cover into complete closing position, the lever being provided with apertures to be brought into register with the apertures of said lugs to receive means whereby the lever and cover may be locked in closed or partially open positions, said lever being provided with a projection disposed beyond the pivotal point of the lever, adapted to engage beneath the depending portion of said rib when the lever is swung into cover opening position.

6. In a railway refrigerator car provided with a hatch opening, a cover for said opening hingedly secured in place, a lever guide member secured to the free end of said cover and provided with a downwardly disposed projection, and an operating lever pivotally secured adjacent to said opening, adapted to cooperate with said guide member and provide means for securing the cover in its adjusted positions, the pivoted end of said lever being formed to extend beneath and engage with the projection of said guide member, whereby the cover will be raised when said lever is moved about its pivotal point.

7. In a refrigerator car having a hatch opening, a single metallic hatch frame arranged in said opening and flanged at top about the hatch timbers, one side of the frame being provided with hinge-buttocks, while the other side is provided with lever attaching lugs, a metallic cover plate hingedly secured to said hinge-buttocks so as to rest on said frame and provided with a depending portion at the free end thereof, a lever fulcrumed in said lugs so as to extend transversely of the cover when the latter is in closed position, while the pivoted end of the lever is provided with an extension adapted to extend beneath and engage with the depending portion of the cover plate so as to

force the latter upwardly when the lever is swung about its fulcrum point, and means whereby the cover plate and lever may be sealed and held in their respective positions.

8. In a refrigerator car having a hatch opening, a cover plate for said opening, and a bell-crank lever pivoted intermediate of its ends adjacent to the free end of said cover plate, one end of said lever being adapted to be locked to the cover plate so as to hold the latter in a number of positions, while the other end of said lever is adapted to engage with the cover plate to force the latter upwardly out of closed position when the lever is swung about its pivotal point.

9. In a refrigerator car having a hatch opening, a cover for said opening, a bracket secured to said cover, provided with a pair of upwardly and outwardly extending apertured lobes and with a downwardly presented toe, a lever, having a plurality of apertures, pivoted adjacent to said opening and arranged to extend between said lobes, with the apertures of the lobes and lever adapted to receive a sealing medium, while the pivoted end of the lever is provided with a projection adapted to engage with said toe and thereby force the cover into open position when the lever is swung about its pivot point.

10. In a refrigerator car provided with a hatch-opening, a closure for said opening comprising a metallic cover-plate provided with downwardly disposed portions adapted to overlap the timbers of the hatch-opening and a lever-guide provided with an intermediate arcuate portion and a part which depends beneath said cover-plate, and a plug rigidly secured to the under surface of the plate, a lever pivotally secured adjacent to said hatch-opening so as to swing vertically across said cover-plate, the pivoted end of the lever being formed to coact with said intermediate arcuate surface of the lever-guide portion to force the cover into closed position while the end of the lever on the opposite side of its pivotal point is adapted to engage beneath the downwardly disposed portion of the lever-guide and cause the closure to be lifted when the lever is swung upwardly.

11. In a refrigerator car provided with a hatch-opening, a metallic frame for said opening disposed across the top and about the sides of the hatch timbers, a closure for said opening comprising a cover-plate adapted to seat on said frame and having edges depending beneath the top of said frame, the cover-plate being provided with a lever-guide, a portion whereof depends below the cover-plate, and a lever pivoted to said frame so as to swing vertically across the cover-plate between the lever-guide, the pivoted end of said lever being adapted to engage beneath the depending portion of the

lever-guide to force the cover-plate upwardly when the lever is swung into releasing position, and sealing means secured to said cover-plate and adapted to engage with the lever and portions of the cover-plate.

12. In a refrigerator car provided with a hatch-opening, a closure for said opening comprising a cover-plate having downwardly flanged sides and upwardly disposed lever-guiding portions provided with a lever-engaging surface, and a lever pivoted adjacent to said hatch-opening, the pivoted end being formed to coact with said engaging surface of the cover-plate when the lever is swung across the cover-plate and thereby force the latter into complete closing position, the pivoted end of the lever being also provided with a laterally disposed portion adapted to engage beneath the adjacent depending flanged side of the cover-plate and force the latter upward when the lever is swung into releasing position.

13. In a refrigerator car provided with a hatch opening, a closure member for said opening, and a lever pivoted to one side of said opening so as to swing across said closure member when the latter is in closed position, the free end of the closure member and the lever adjacent to its pivotal point being provided with correlated surfaces adapted to force the closure member into complete closing position when the lever is swung across said member and to force the latter upward when the lever is swung upwardly toward one side of the opening into releasing position.

14. In a refrigerator car provided with a hatch-opening, a closure member for said opening adapted to overlap the timbers of said opening and provided with upwardly inclining apertured portions, and a lever pivoted adjacent to said opening, provided with openings adapted to be brought into register with the apertures of said upwardly inclining portions when the lever swings therebetween, the pivoted end of the lever being adapted to engage beneath the adjacent side of the closure member when the lever is swung upwardly into releasing position and thereby lift said closure member.

15. In a refrigerator car provided with a hatch opening, a closure member for said opening provided with a pair of parallelly arranged upwardly inclining portions and an arcuate rib intermediate of said parallel portions, the upper ends of the parallelly arranged portions being apertured, sealing means flexibly secured to said portions, and a lever pivoted adjacent to said opening to swing between said parallelly arranged portions and having apertures adapted to register with the apertures in said parallelly arranged portions to receive said sealing means, the pivoted end of the lever being formed to provide an arcuate portion

adapted to engage with said arcuate rib whereby the closure member is forced into complete closing position when the lever is swung onto the closure member.

16. In a refrigerator car provided with a hatch-opening, a closure member for said opening provided with apertured lever guiding portions, a sealing member secured to said portions against removal, an angular lever pivotally secured adjacent to the hatch opening so as to swing vertically between the guiding portions of the closure member or away from the hatch opening, the lever being provided with a plurality of

openings at spaced distances apart, each adapted to be brought into register with the apertures in the lever guiding portions to receive said sealing member and thereby lock the lever and closure member in various adjusted positions, the lever and guiding portions being provided with correlated surfaces adapted to coact when the lever is swung across the closure member, and means intermediate of the lever and the closure member whereby the latter is forced upwardly when the lever is swung toward releasing position.

KARL F. NYSTROM.