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REFRIGERATOR CAR HATCH ARRANGEMENT

Filed Oct. 17, 1938

3 Sheets-Sheet 1

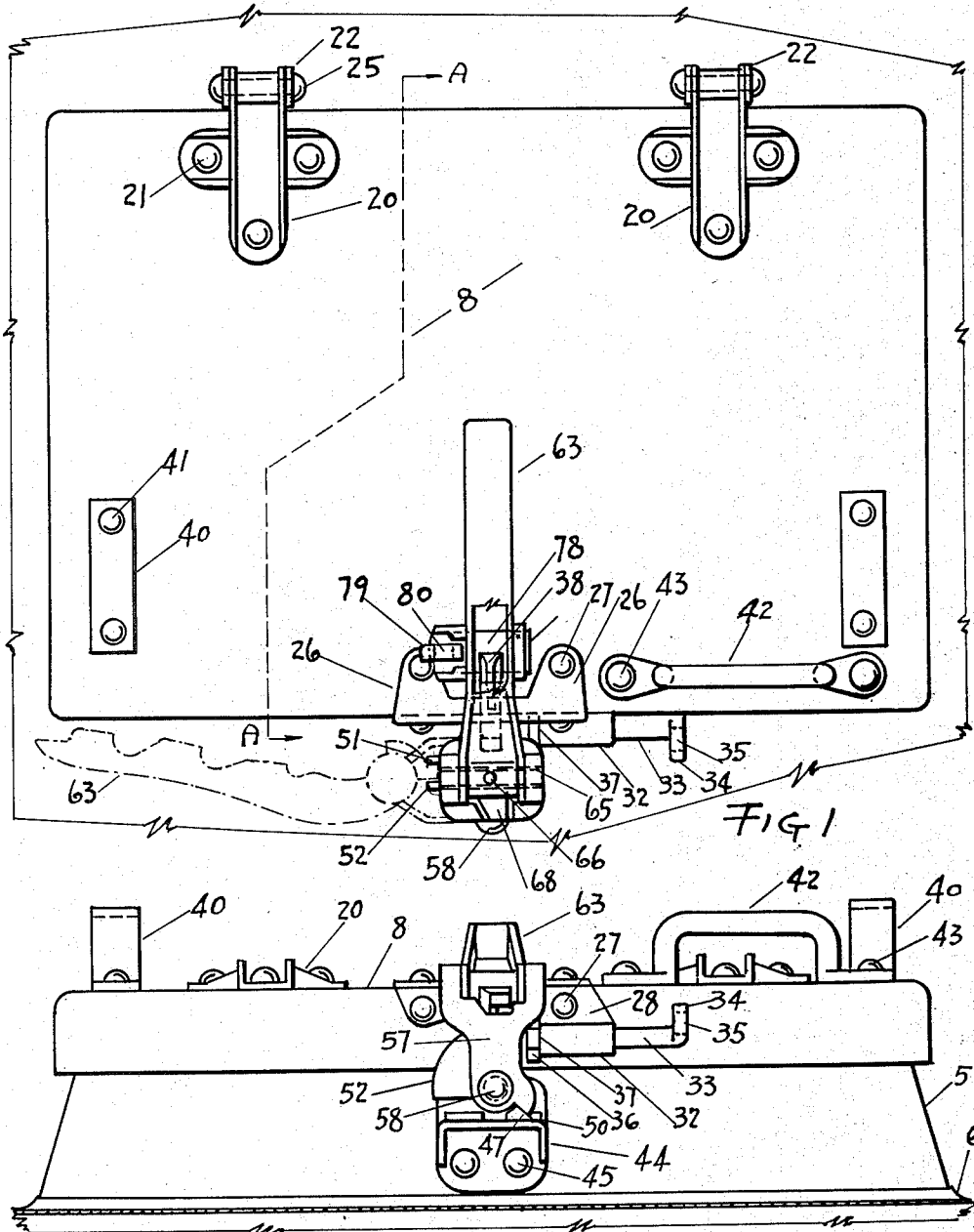


FIG. 2

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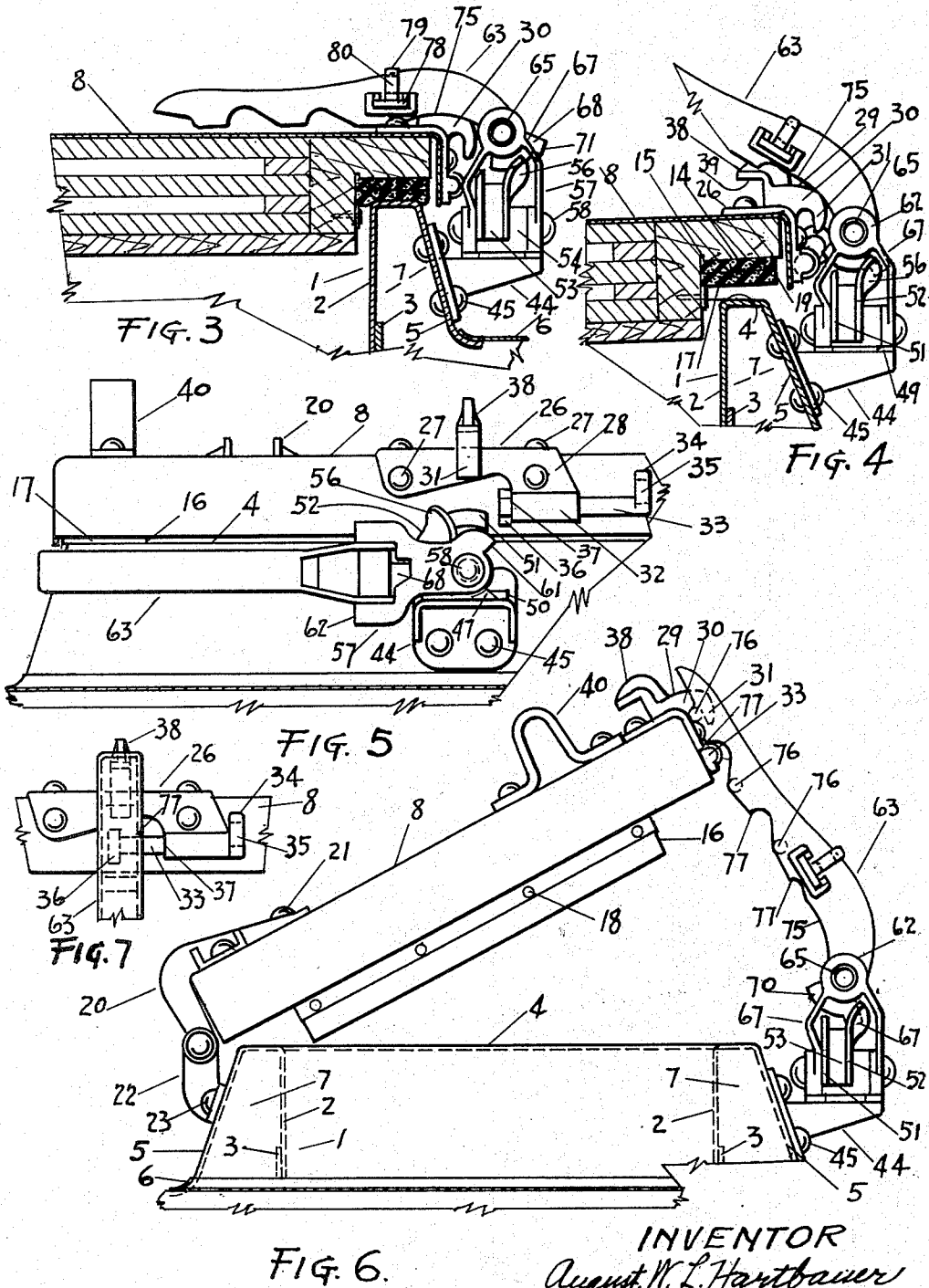
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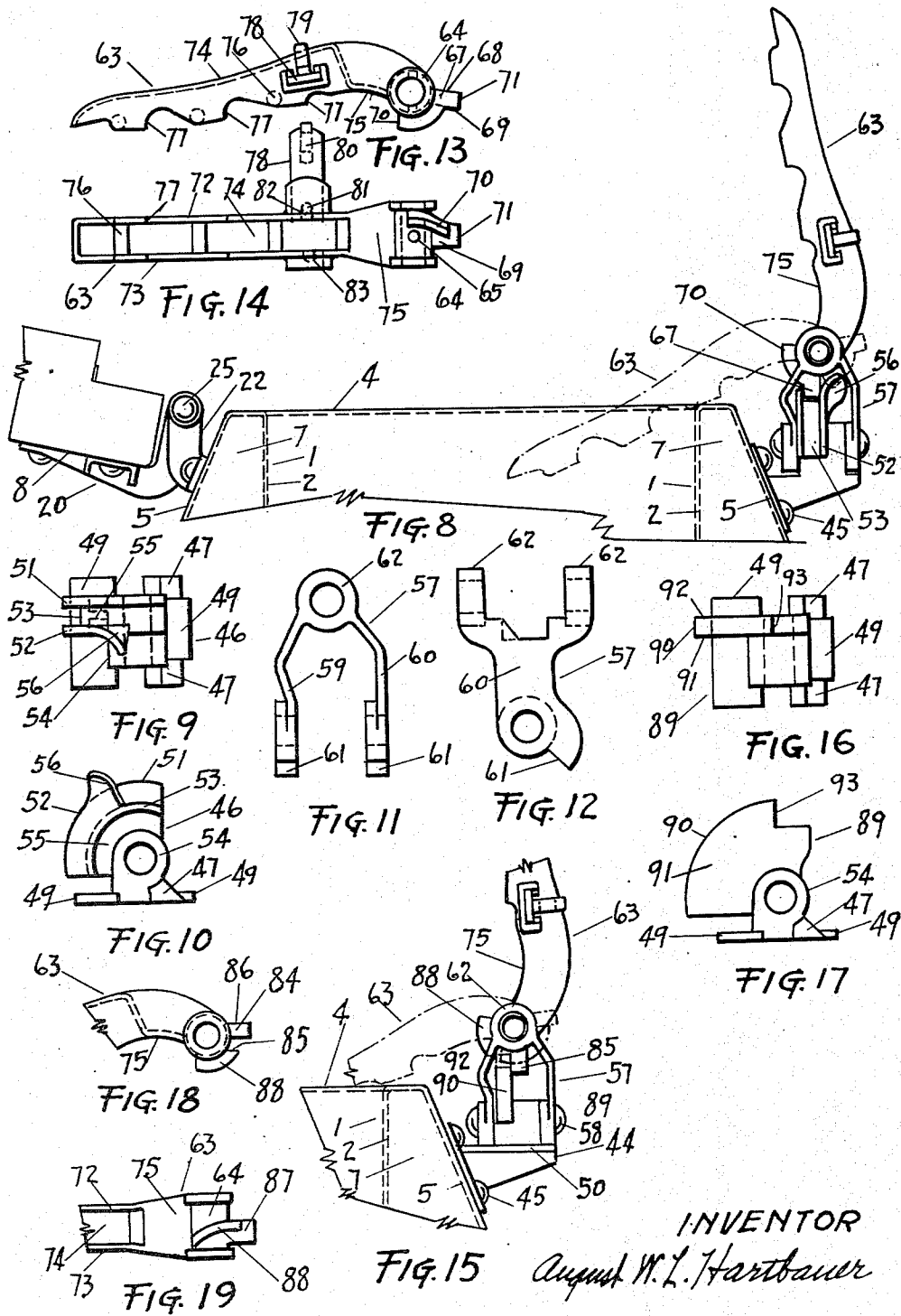
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REFRIGERATOR CAR HATCH ARRANGEMENT

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7 Claims. (Cl. 292—256.5)

My invention relates to a refrigerator car hatch-cover, and also to locking and operating means therefor.

In railway car hatch closure mechanism in general use, the operating lever is secured to the car parts by a staple. This form of connection offers an unusual amount of clearance, with the result, that the trainmen and other operators must be alert to see that the lever when in release position does not obstruct the platform or other roof sections in the path of operators, as an act to promote safety. Another form of mechanism in use on a limited number of cars employs a cast lever, swingably mounted on a car body bracket, adapted to be moved crosswise of the hatch cover toward its closed position or rearward to its release position, this position being approximately 20 degrees off the vertical and fixed by the complementary stops of the body bracket. A lever so placed obstructs the path of trainmen and other operators who, as they walk about, choose to move the lever out of this position into the hatch opening or on the hatch cover in the interest of their safety.

It is the object of this invention, to provide the operating lever of the closure mechanism with a hinged extension, as a means of providing more adequately for ease of operation and to definitely and automatically fix the relative position of the operating lever and its extension in all positions, thereby insuring unobstructed roof platforms or running boards.

Further objects and advantages of the invention will be more readily apparent and more fully described in connection with the following description taken with the accompanying drawings showing embodiments of the invention, but it will be understood that changes may be made in the parts and details of construction without departing from the principles of the invention. I, therefore, do not limit myself to the exact construction shown and illustrated, but in the claims hereinafter set forth I intend to cover all modifications and variations of the invention.

In the drawings:

Fig. 1 is a top plan view of a refrigerator car hatch embodying the hatch cover mechanism of the invention, a portion of the operating lever web being cut away to show the locking means more clearly;

Fig. 2 is an elevation of a refrigerator car hatch cover and the mechanism of the invention;

Fig. 3 is a sectional view taken upon the line

A—A of Figure 1 looking in the direction of the arrows, and shows the hatch cover in closed position;

Fig. 4 is a sectional view similar to Figure 3, and shows the hatch cover raised slightly by the reaction of the gasket as the mechanism is released, also the operating lever resting on the hatch cover bracket extension;

Fig. 5 is a front elevation with the cover positioned as in Figure 4, the operating lever with its extension being shown in full release position, supported by the car body bracket;

Fig. 6 is an elevation showing the hatch cover positioned in a stage of ventilation supported by the hatch cover extension as it engages the respective supporting bar of the operating lever;

Fig. 7 is a fragmentary front elevation showing the hatch cover and the lever in a stage of ventilation, with the sliding lock of the hatch cover bracket moved into operative position, restricting the upward movement of the hatch cover and providing means for the application of the railroad seal;

Fig. 8 is a side elevation with a section of the hatch cover shown in full open position. In this construction the extension bracket is of single unit design and adapted for direct attachment to the body part. The operating lever and the attached extension are shown in full lines in the ultimate position by lateral movement from the release position of Figure 5. The view also shows by dot and dash lines the limit of crosswise movement of the operating lever and that the lever extension is held substantially vertical by the mechanism throughout this movement;

Fig. 9 is a plan view of the operating lever extension bracket;

Fig. 10 is an elevation of the operating lever extension bracket;

Fig. 11 is a side view of the operating lever extension;

Fig. 12 is a front view of the operating lever extension;

Fig. 13 is a side view of the operating lever;

Fig. 14 is a bottom plan view of the operating lever;

Fig. 15 is a fragmentary side elevation similar to Figure 8, embodying the modified lever and guide means of Figures 18 and 19;

Fig. 16 is a plan view showing a modified type of operating lever extension bracket over that shown in Figure 9, and intended for use in combination with the operating lever of Figures 18 and 19;

Fig. 17 is an elevation of the bracket shown in Fig. 16;

Fig. 18 is a fragmentary side view of the bearing end of the operating lever showing a modified type of guide portion and retaining flange, for use with the lever shown in Figures 16 and 17;

Fig. 19 is a fragmentary bottom view of the bearing end of the operating lever shown in Fig. 18.

As illustrative of the invention, there is shown a portion of a railway car refrigerator hatch arrangement in which the hatch opening is formed by hatch members 1 contoured as shown, having a flange 2 for attachment to the frame members 3. Said hatch members 1 are shaped to provide a gasket contact surface 4 at its top rim and have an outwardly extending portion 5 acting as a support and attachment flange for the roof sheet 6, the space 7 formed by the hatch frame and roof parts to be suitably insulated. The hatch cover 8 may be constructed in any well known manner and be arranged to provide a gasket contact surface 14, a retaining groove 15, and a gasket attachment surface 16. The gasket 17 is provided with a relatively short flange at its contact surface and when placed in contact with the hatch cover in the assembly, the gasket 17 rests on the surface 14 with the relatively short flange positioned in the groove 15 with the edge contacting the surface 16 and secured thereto with nails 18, leaving the forward edge 19 free to flex.

One edge of the hatch cover 8 is supported by hinges as shown in Figures 1, 6 and 8. The hinge straps 20 are secured to the hatch cover 8 by rivets 21 and the hinge butts 22 are secured to the hatch frame 5 with rivets 23 and assembled with the hinge straps 20 by a rivet or bolt 25. The hatch cover bracket 26 is angular in shape and secured to the hatch cover 8 with rivets 27, the vertical flange 28 of the bracket 26 being provided with a hook shaped extension 30 as shown in Figures 3, 4 and 6. The top surface 29 of the body portion 30 is arcuate, the downwardly extending portion 31 being spaced apart from the vertical flange 28. The flange 28 is provided with a bearing 32, movably supporting the sliding bolt 33, the bearing 32 being open at the back to facilitate the assembly of the bolt 33 at the instance of the application of the hatch cover bracket 26 to the hatch cover 8. The flange of the hatch cover 8 forms complementary retaining means when assembled, the flange 34 of the sliding bolt 33 being provided with aperture 35 adapted to act as a means for the application of the railroad seal and used only to maintain the assembly in any ventilating stage as shown in Figure 7. To regulate the stroke of the bolt 33, the integral lug 36 is adapted to contact the stop surface 37 of the bearing 32 of the flange 28 of the hatch cover bracket 26. The cantilever bracket 38 extends rearwardly and is formed integral with the top flange of the hatch cover bracket 26, its bottom surface 39 being substantially parallel to the said top flange.

To support the hatch cover 8 in the fully open position in such manner that no part of the operating mechanism fouls the car roof 6, brackets 40 are provided and secured to the hatch cover 8 with rivets 41. A grab iron 42 is secured to the hatch cover 8 with rivets 43 and the body bracket 44 is secured to the hatch frame or the body part 5 with rivets 45. The operating lever extension

provided with stop lugs 47 and assembled on the bracket 44 by welding its flanges 49 to the bracket 44 at 50. The flanges 51 and 52 of the bracket 46 are arcuate and integral with base portion 53 and connected to the bearing housing 54 by the web 55, the flange 52 being backset from the upper end of the flange 51 and provided with a flared end 56, said flared end 56 extending above the flanges 51 and 52.

The operating lever extension 57, best shown in Figures 11 and 12, is pivotally mounted on the bracket 46 by means of a rivet or bolt 58. The side walls 59 and 60 are provided with stop lugs 61 and are spaced apart and adapted to converge forming the upper bearings 62. The operating lever 63 is provided with a bearing 64 and is assembled with the operating lever extension 57 by the wrist pin 65 which is secured in the bearing of the operating lever 64 with a rivet 66 or some other accepted manner. The oblong guide portion 67, best shown in Figures 13 and 14, is integral with the operating lever bearing 64 and projects from said bearing 64 forming the substantially parallel contact surfaces 68 and 69. The retaining flange 70, integral with the lever bearing 64, is set back from the end 71 of the guide portion 67 and spirals rearward from the surface 69 of the guide portion 67. The operating lever 63 is channel shaped with the flanges 72 and 73 connected by the web 74, the web 74 being transposed at the lever bearing 64 to provide the bearing surface 75, the portion rearward said bearing 75 serving to space apart the flanges 72 and 73. The flanges support the spaced cross bars 76, the edges of the flanges 72 and 73 being contoured to form the complementary locking surfaces 77 for the slide bolt 33, best shown in Figures 6, 7, 13 and 14. The sliding bar 78 has a lug 79 adjacent one end thereof, said lug 79 being provided with an aperture 80 for use in connection with the railroad seal means. The said sliding bar 78 is mounted on the operating lever 63 and the sliding movement of the bar 78 is gauged by the retaining means 81 contacting the slots 82 and 83 of the operating lever flanges 72 and 73.

The modified operating lever extension bracket 89, best shown in Figures 16 and 17, is provided with stop lugs 47 assembled on the bracket 44 by welding its flanges 49 to the bracket 44 at 50, as shown in Figure 15. The arcuate flange 90 is integral with the bearing 44 and is provided with a bearing surface 93, also parallel surfaces 91 and 92.

The operating lever extension 57, best shown in Figures 11 and 12, is movably mounted on the bracket 89 with a rivet or bolt 58, as shown in Figure 15. The side walls 59 and 60 are provided with stop lugs 61, spaced apart and adapted to converge forming the upper bearings 62. The operating lever 63 is provided with a bearing 64, a wrist pin 65 being secured therein by a rivet 66 or other accepted method, as shown in Fig. 1.

The oblong guide portion 84 corresponding to the part 67 of Fig. 13, best shown in Figures 18 and 19, is integral with the operating lever bearing 64 and projects from said bearing 64 forming the surfaces 86 and 87 substantially parallel respectively. The retaining flange 88 is integral with the lever bearing 64 and the end 85 is spaced from the surface 87 of the oblong portion 84 and projects rearward. The lever guide portion 84 and the edge 85 contact with 76

the flange 90 of the bracket 88 as the operating lever moves to the release position.

An important feature of my invention has to do with the mounting and capacity for movement of the operating lever and its extension. It will be noted that the path of possible movement of the lever is definitely fixed and the operator or workmen cannot make a mistake in its use. Neither does he require instruction in the use, since he can operate it only in one manner. Even if the lever should be allowed to swing over the hatch opening when the cover is laid back, as shown in dotted lines in Fig. 8, the extension will still be locked in its vertical position due to the fact that the flange 70 on the operating lever, Fig. 13, will be retained in the groove, between the flanges 51—52, Fig. 9, of the bracket. It is only when the lever 63 is in its vertical position, as shown in full lines in Fig. 8, that it may be swung to an inactive position in which it lies substantially parallel to the roof of the car and alongside of and closely adjacent to the hatch frame. When in this position it can move only toward a vertical position.

Specifically, the operation is as follows:

With the hatch cover manually moved to the position in Figure 5, I complete the closing by means of the mechanism by raising the operating lever 63 and its extension 57 from the release position shown in Figure 5 laterally to the vertical position shown in Figures 8 and 15, then lowering the lever to contact the cover bracket extension 30, as shown in Figure 4. I then continue the movement of the lever downward to the position shown in Figure 3 and lock the parts by moving the sliding bar 78 of the operating lever 63 into engagement with the surface 39 of the hatch cover bracket 38 completing the closing, as shown in Figures 1, 2 and 3. The sliding bar 78 has a lug 79 apertured for the use of the railroad seal means to prevent pilfering or unauthorized change of the hatch position. To apply said seal I encircle the operating lever rearward section, then thread the seal through the aperture 80 of the slide bar 78 and assemble the ends of the seal.

To open the hatch cover 8, I release the operating lever 63 by moving the slide bar 78 out of engagement, reaction of the gasket 17 raising the hatch cover slightly as in the Figure 4. From this position I move the operating lever 63 upward to the vertical position as in Figures 8 and 15 and then laterally release it, allowing the operating lever and its extension to gravitate to the full release position, as shown in Figure 5 and in dot and dash lines in Figure 1. I complete the opening operation by moving the cover manually to the position shown in Figure 8.

To place the hatch cover 8 in any one of the ventilating stages I position the cover as in Figure 5 and grip the grab iron 42 with one hand and the free hand move the operating lever from the release position laterally to the vertical, then toward the hatch cover to register and engage the cross bar 76 of the operating lever 63 at the ventilating stage selected, and rest the extension 30 of the hatch cover bracket 26 on the bar 76. The portion 31 of the extension 30 maintains said service assembly, as shown in Figure 7. To prevent pilfering or unauthorized movement of the hatch cover the slide bolt 33 of the cover bracket 26 is moved into engagement with the operating lever flange retaining edge 77, as shown in Figure 6. The slide bolt 33 is provided with a lug 34 having aperture 35 for use

in connection with the railroad seal which encircles the projecting bar 33 and is threaded through the aperture 35.

Broadly, my invention comprehends a structure including an operating lever, a lever extension and a bracket, the extension being mounted on the bracket for oscillation on a pivot, the axis of which is normal to the adjacent side wall of the hatch opening, the lever being mounted on the extension for oscillation on a pivot, the axis of which is parallel to the adjacent side wall, together with means carried by the bracket and the lever for strictly defining all possible movement of the lever. In the mechanism shown the lever can be in a position of rest only when overlying the hatch opening and when lying alongside of and parallel to the adjacent side wall of the hatch opening.

I claim:

1. In hatch-cover operating means, for use with a cover and a frame, a bracket secured to the frame, an operating lever extension mounted on the bracket for oscillation on a pivot, the axis of which extends transverse to the adjacent side wall of the hatch opening, an operating lever mounted on the extension for oscillation on a pivot, the axis of which is parallel to the adjacent side wall of the hatch opening, and cooperating means on said bracket and said lever for defining and limiting the movement of the lever from a position over the hatch cover to a horizontal position alongside of and parallel to said opening.

2. In hatch-cover operating means, for use with a cover and a frame, a bracket secured to the frame, an operating lever extension mounted on the bracket for oscillation on a pivot, the axis of which extends transverse to the adjacent side wall of the hatch opening, an operating lever mounted on the extension for oscillation on a pivot, the axis of which is parallel to the adjacent side wall of the hatch opening, said bracket and lever respectively having a groove and a projection for engaging the groove, whereby to provide for a defined movement of the lever from a position overlying the cover to one alongside of said opening.

3. In a hatch-cover operating means, for use with a cover and a frame, a bracket secured to the frame, an operating lever extension mounted on the bracket for oscillation on a pivot, the axis of which extends transverse to the adjacent side wall of the hatch opening, an operating lever mounted on the extension for oscillation on a pivot, the axis of which is parallel to the adjacent side wall of the hatch opening, said lever having a projection and said bracket having a way, the cooperation of said projection and way providing for free oscillation of the lever on the extension in a plane extending over the cover without movement of the extension and also with the lever in a vertical position, providing for lateral oscillation of the lever and extension to a position alongside of the hatch opening.

4. In hatch-cover operating means, for use with a cover and a frame, a bracket secured to the frame, an operating lever extension mounted on the bracket for oscillation on a pivot, the axis of which extends transverse to the adjacent side wall of the hatch opening, an operating lever mounted on the extension for oscillation on a pivot, the axis of which is parallel to the adjacent side wall of the hatch opening, said bracket having an arcuate groove extending parallel to the side wall of the hatch opening and said lever

having two projections one of which lies along-
side of the mouth of said groove when the lever
is in other than vertical position and which pro-
jection is too wide to enter said groove and the
other of which projections will register with and
enter said groove when the lever is in vertical
position, whereby the lever may freely swing over
the cover with the lever extension locked against
movement and, when in vertical position, may
swing laterally with the extension into an idle
position alongside of the hatch opening.

5. In hatch-cover operating means, for use
with a cover and a frame, a bracket secured to
the frame, an operating lever extension strad-
dling the bracket and pivoted thereto for oscil-
lation in parallel to the side of the hatch open-
ing, an operating lever mounted on the exten-
sion for oscillation in a plane that intersects said
opening, said lever having a projecting portion
operating between the legs of the extension and
engaging the bracket, and cooperating means on
said bracket for defining and limiting the move-
ment of the lever from a position over the hatch
cover to a horizontal position alongside of and
parallel to said opening.

6. In hatch-cover operating means, for use

with a cover having an overhanging undercut
projection, an operating lever of angular cross
section and provided with notches in a flange
of the angle and with stop pins between adjacent
notches, said pins being adapted to selectively
engage said overhanging projection, and means
for mounting said lever with capacity for con-
trolled oscillation in planes over and alongside
of said cover, whereby said lever is confined in its
oscillation over the cover to a plane wherein the
pins in the lever register with said projection.

7. In hatch-cover operating means, for use
with a cover, a bracket on the cover having an
upstanding projection and a projection overhang-
ing the edge of the cover, both said projections
being undercut, an operating lever of generally
channel shape having a transversely movable
latch for engaging said upstanding projection
and provided with spaced transverse pins for en-
gagement with said overhanging projection, and
means for mounting said lever with capacity for
oscillation in a confined plane parallel to said
projections and for folding said lever alongside
said cover when not in use.

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