June 11, 1940. E. R. SWANSON 2,204,328

HATCH CLOSURE

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FIG.1.

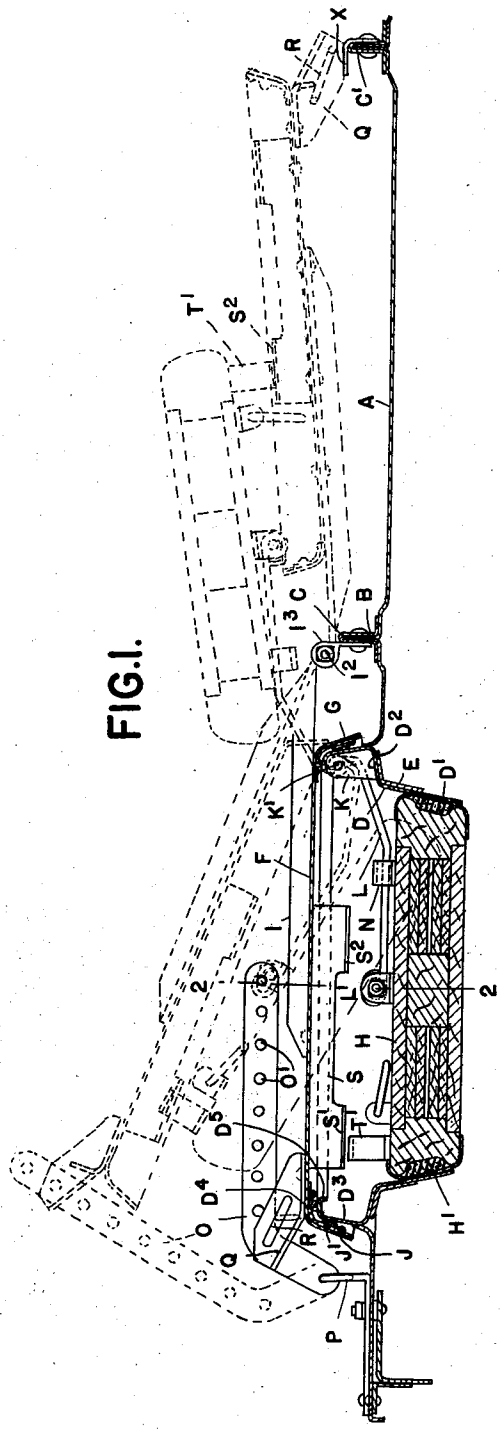
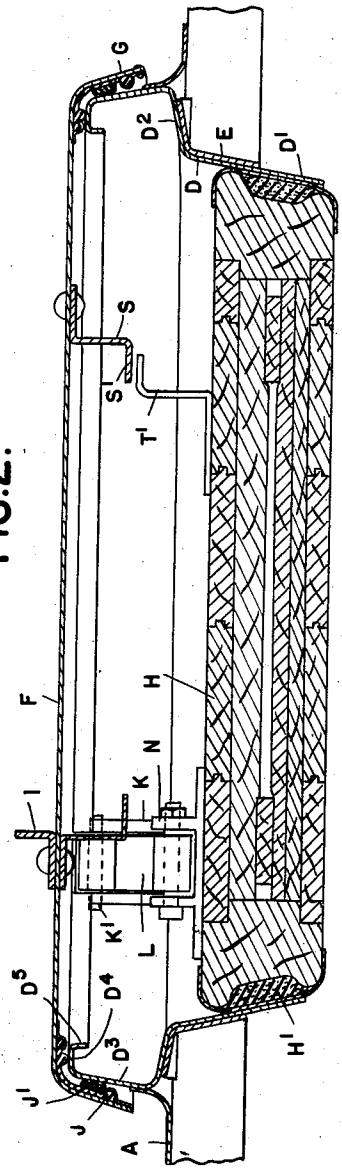


FIG.2.



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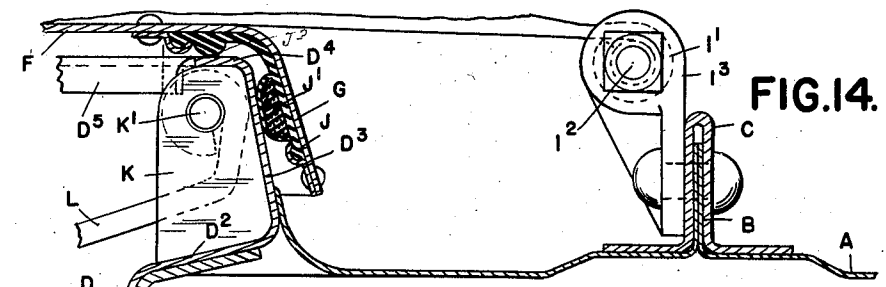


FIG.14.

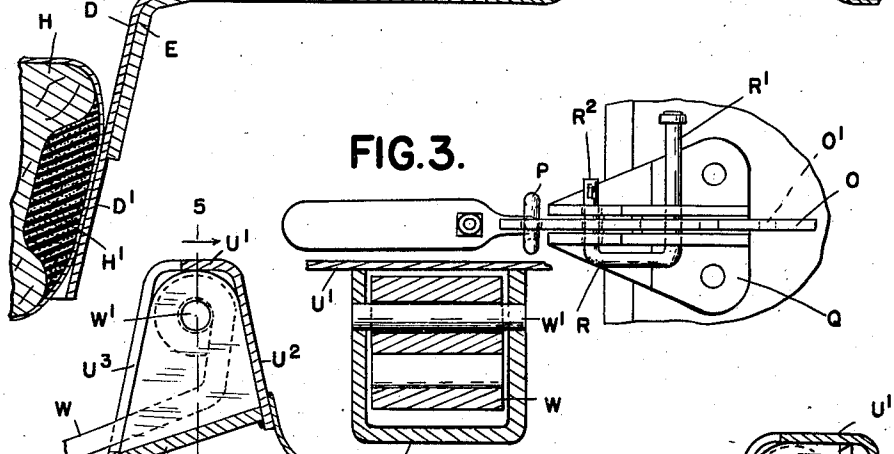


FIG.3.

FIG.5.

FIG.4.

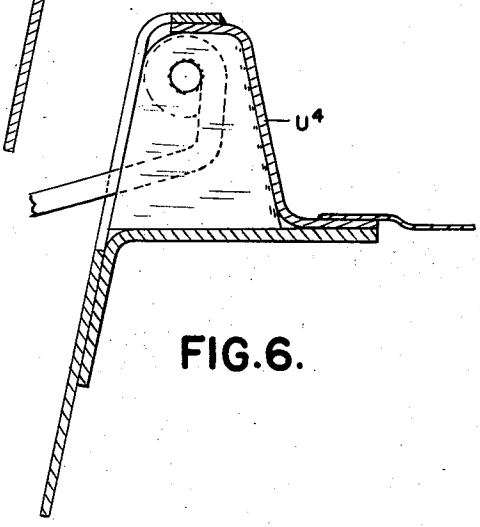


FIG.6.

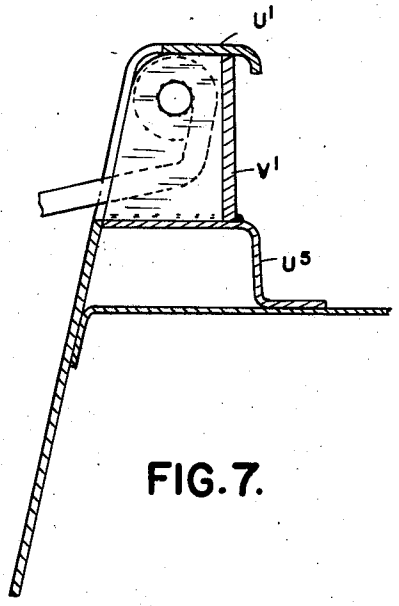


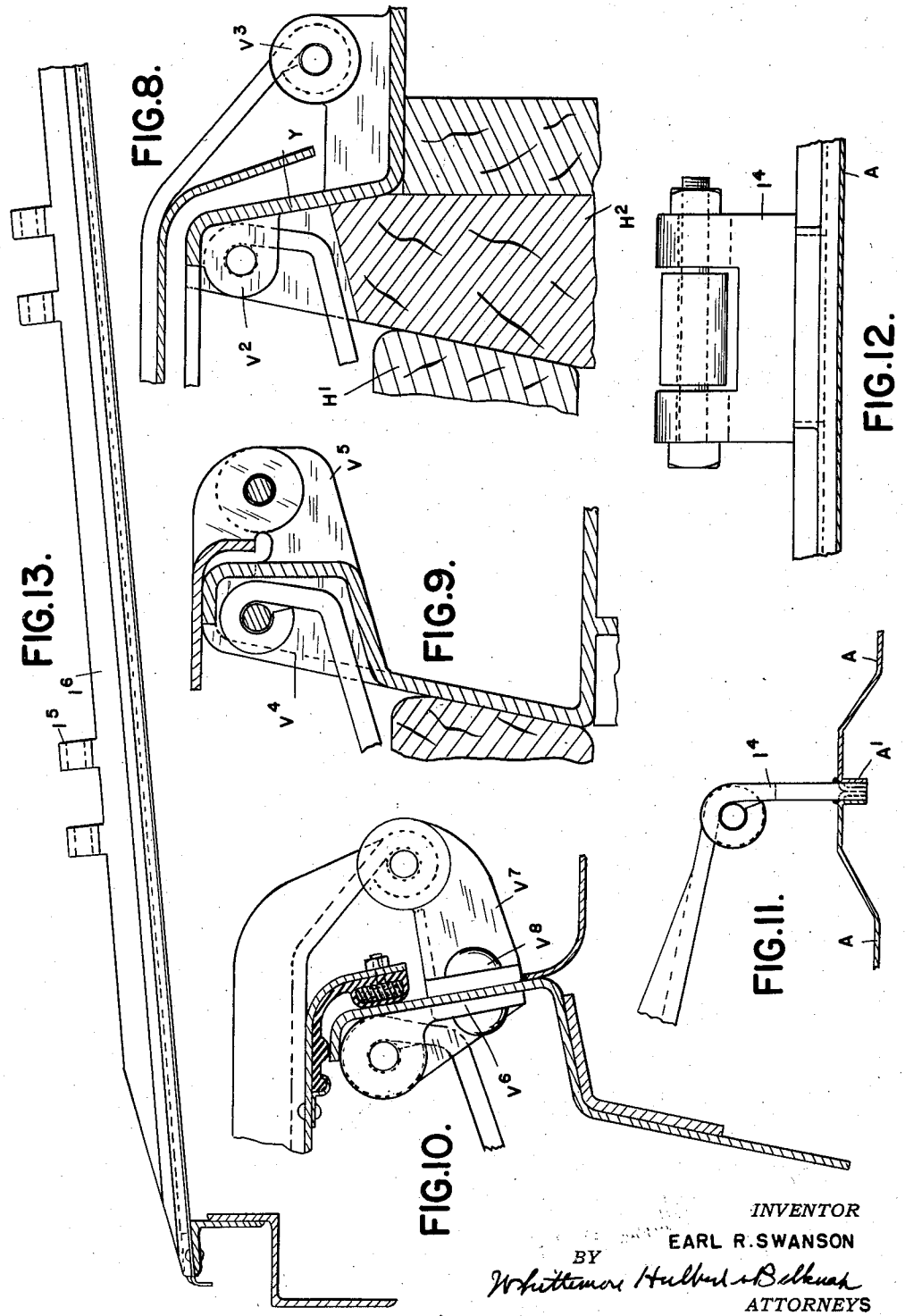
FIG.7.

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Patented June 11, 1940 2,204,328

UNITED STATES PATENT OFFICE

2,204,328

HATCH CLOSURE

Earl R. Swanson, Chicago, Ill., assignor, by mesne assignments, to Standard Railway Equipment Manufacturing Company, a corporation of Delaware

Application April 11, 1938, Serial No. 201,432

6 Claims. (Cl. 105—377)

The invention relates to hatch constructions for railway cars of the refrigerator type and more particularly to hatch closures. It is the object of the invention to obtain a construction having various advantages, such as effective sealing of the hatch when closed; provision for ventilation; and secure attachment of all movable parts to the car roof. With these and other objects in view, the invention consists in the construction as hereinafter set forth.

In the drawings:

Figure 1 is a vertical central section through the hatch and closure in a plane longitudinal of the car;

Figure 2 is a cross section on line 2—2 of Figure 1; the portion on the left of the center being viewed in a forward direction and the portion on the right in a rearward direction;

Figure 3 is a plan view of the locking mechanism;

Figure 4 is a view similar to Figure 1, showing a modified construction;

Figure 5 is a section on line 5—5 of Figure 4;

Figures 6, 7, 8, 9, 10, 11, 12 and 13 show other modifications;

Figure 14 is an enlarged section of a portion of Figure 1.

Hatch constructions for railway cars, such as refrigerator cars, usually include a hatch frame having a portion projecting upward above the roof and a depending portion extending through the insulating lining to the interior of the car. It is also usual to provide a double closure consisting of a cover for the portion which is exterior to the car and a plug which fits within the depending portion of the frame to effectively seal the same. My improved construction is of the type just described and includes, first a novel means for hinging the outer cover to the roof or hatch frame; second the novel means for independently hinging the plug; third the means for producing an effective seal in the closed position of the cover and plug; and fourth provision for holding the closure open in different positions of adjustment for the purpose of ventilation.

In detail, A are the outer sheets of a car roof which extend transversely of the car and are provided with upstanding flanges B engaged by a seam cap C riveted thereto. D is the hatch frame which is arranged in an opening in one of the sheets A and which is supported by the cross members E and other structural parts of the roof frame, not shown. The hatch frame D is of a known type having a depending portion D' tapered in a downward direction and forming a seat for the closure plug, a laterally outwardly extending portion D^2 which rests upon the supporting members E, an upwardly extending and inwardly tapering portion D^3, and an inwardly extending top flange D^4 terminating in a downturned flange D^5. F is the hatch cover which has a downturned annular flange G substantially parallel to the portion D^3, and H is the plug which is normally seated within the portion D'.

To securely fasten the cover F and plug H to the car roof and at the same time to permit movement of the same I have designed the following construction. I are reenforcing angle bars on the cover F which extend beyond the same longitudinally of the car and are provided at their outer ends with eyes I'. These are hinged by pins I^2 to bifurcated brackets or hinge butts I^3 secured to and extending upward from one of the seam caps C. Thus, the cover F has its hinged support on this seam cap which is a rigid part of the roof frame. Also, the spacing between the hinge and the adjacent flange of the cover is such as to provide the necessary radius of movement for clearing the hatch frame. To effectively seal the joint between the cover and the frame, the former is provided with a resilient gasket or sealing strip J extending around the inside of the flange G and also inward on the underside of the cover. This strip is preferably provided with a resilient rib J' for seating against the portion D^3 of the frame, and also a rib J^2 for seating upon the top of the flange D^4. Thus, when the cover is in closed position it will have sealing contact with the frame in two zones, and the ribs J' and J^2 also cushion the shock of closing.

The plug H is also hinged but the hinged butts are attached to the inside of the frame D. As shown in Figure 1, these butts are formed by spaced members K welded in the channel of the frame formed by the portions D^2, D^3 and D^4. The arm L is pivotally secured between the members K by a pin K', said arm extending to approximately the center of the plug and then return-bent to form a slot L'. A bracket M is secured to the plug and a pin M' extending through the slot L' connects this bracket to the arm L. A guide bracket N through which the arm L passes and which also is secured to the plug, will hold the latter substantially parallel to the arm. This construction permits of swinging the plug with the arm L in opening and closing the hatch. Also, the slot L' permits sufficient lateral adjustment of the plug on the arm L to insure its proper seating in the portion D' of the frame.

A resilient cushion H' in a peripheral groove in the plug insures proper sealing.

When the hatch is closed it should be locked from accidental opening, and it is also desirable to provide means for holding the hatch closure open and in different positions of adjustment to provide for ventilation when required. For this purpose an arm O is pivotally secured to a bracket P bolted or otherwise attached to the roof, said arm being bent to extend upward and then horizontally above the cover F and being provided with a series of apertures O'. Q is a bifurcated bracket member secured to the cover F and embracing the arm O, and R is a U-shaped locking bolt for adjustably securing the arm O to said bracket. One leg R' of the locking bolt R slidably engages apertures in the furcations of the bracket Q to be laterally adjustable therein, and the other leg R^2 is shorter for detachable engagement with the apertures in the bracket Q, and one of the apertures O' in the arm O. This permits of locking the cover closed when the leg R^2 is engaged with the last aperture O' of the series, and where it is desired to hold the cover open in different positions, this can be accomplished by engaging the leg R^2 with one of the other apertures O'. The arm L then becomes a strut for holding the cover at different inclinations.

The plug H is normally unconnected with the cover F so as to permit of independent swinging movement of these members. If, however, ventilation is required it is necessary to hold open the plug H, as well as the cover which is supported on the strut arm O. This is accomplished by providing on the inside of the cover F a depending flanged bracket S and upon the plug H an upstanding flanged bracket T. The flanges S', S^2 and T' of these brackets overlap each other, but in the normal closed position of the cover and plug they are disengaged. Inasmuch, however, as the cover and plug are hinged at different points and the radius arm between the cover hinge and bracket flange S' is longer than the radius arm between the plug hinge and the bracket flange T', it is possible to engage these brackets with each other. This can be done by swinging upward both the cover and the plug until the bracket flange T' will clear the inner end of the bracket flange S' at which point the flange T' of the bracket T may be raised above the flange S' of the bracket S. By then lowering both cover and plug these flanges will come into overlapping engagement so that if the cover is supported by the brace member O at some particular angle, the plug will be held suspended therefrom.

With certain hatch constructions the frame is modified from the construction shown in Figure 1 to that shown in Figure 4. In this the tapered depending portion U extends upward to the top of the frame at which point there is an outwardly extending flange U' and a depending flange U^2. A hinge butt V is placed in the channel formed by the members U, U', U^2 and is secured thereto by welding. There is also an aperture U^3 in the member U through which the hinge arm W extends, said arm being pivoted by a pin W' to the butt V. The butt V is preferably of U-shaped form so that when welded to the frame it will form a pocket within the channel connected with the aperture U^3.

With the construction as described, when the hatch cover is open it may be swung through an angle of approximately 180° until the bracket Q is above an adjacent seam cap C' of the roof. A bracket X secured to this seam cap forms a support on which the bracket Q rests. The plug H may also be swung over the cover F into the position indicated in dotted lines in Figure 1. In open position the plug H is supported by the flange T' of the bracket T resting on the flange S^2 of the bracket S. While I have described only a single hinge for the cover and a single hinge for the plug, I preferably provide a pair of each, which are arranged upon opposite sides of the center of the hatch opening, as indicated in Figure 2.

My improvements are applicable to various types of hatch frame which have heretofore been used. Thus, in Figure 6 the hinge butts for the plug are arranged between the upper portion of the hatch frame and an external rim member U^4. In Figure 7 the hatch frame has an annular rim member U^5 surrounding the same and the hinge butts V' are U-shaped members welded to the member U^5 and the top flange U'. Figures 8, 9 and 10 illustrate modifications in which the hinge butts for both the plug and the cover are secured to the hatch frame. In Figure 8 a construction is shown where the plug H' is seated in a wooden frame H^2, and a cast metal hatch frame Y is mounted on the top of the roof for receiving the hatch cover. Hinge butts V^2 and V^3 are cast integral with the frame Y and arranged respectively inside and outside the same for engaging the hinge straps of the plug and cover. Figure 9 shows another construction of hatch frame having the hinge butts V^4 and V^5 integral therewith and respectively inside and outside thereof. Figure 10 illustrates a construction where separate hinge butts V^6 and V^7 are arranged respectively inside and outside of the hatch frame and are secured thereto and to each other by rivets V^8. In Figure 11 hinge butts I^4 for the cover have their shanks extending downward between the flanges A' of the adjacent roofing sheets A and are secured thereto by welding. Figure 12 shows a side elevation of the construction in Figure 11. Figure 13 illustrates another modification where the hinge butts I^5 for both hinges are formed integral with a strip I^6 which extends longitudinally of the seam and is welded between the flanges A' thereof.

With all of the various modifications as well as with the construction previously described, the hinge connection for the plug does not in any way interfere with the hatch cover or break the seal between the same and the hatch frame. This is of importance, particularly where the resilient sealing strip is arranged between the hatch frame and the cover, for such strip will exclude all dirt and cinders from access to the interior of the hatch frame above the plug. This would not be possible if the hinge butts of the plug were arranged outside of the hatch frame.

What I claim as my invention is:

1. In a hatch construction including a hatch frame, a hatch cover for said frame and a plug within said frame, and hinge butts for said cover and plug secured to said frame respectively outside and inside thereof.

2. In a hatch construction including a hatch frame, a hatch cover outside said frame and a plug within said frame, a hinge for said cover outside said frame, and hinge means for said plug wholly within said frame.

3. In a hatch construction, a hatch frame the upper portion of said frame being of channel cross section, a hatch cover, a hinge connection for said hatch cover outside said frame, a plug

within said frame, a carrying arm for said plug, and a hinge butt for said carrying arm located in said channel.

4. In a hatch construction, a hatch frame the upper portion of said frame extending outwardly upwardly and inwardly to form a channel cross section, a hatch cover having a depending flange surrounding said frame, a plug seated within said hatch frame, an arm carrying said plug, and a hinge butt for said arm located in said channel portion.

5. In a hatch construction, a hatch frame the upper portion of said frame extending outwardly and downwardly to form a channel cross section, a hatch cover having a depending flange surrounding said downwardly extending portion, a hinge for said cover outside said frame, a plug seated in said frame, a carrying arm for said plug extending outwardly through an aperture in said frame into the channel cross section thereof, a U-shaped member secured within said channel in registration with said aperture forming a pocket for the end of said arm and constituting a hinge butt therefor.

6. In a hatch construction, a hatch frame the upper portion of said frame extending outwardly upwardly and inwardly to form a channel cross section, a hatch cover having a depending flange surrounding said upwardly extending portion, sealing means between said cover and frame, a plug within said frame, a hinge butt for said plug located in said channel, and a hinge butt for said cover located outside said frame beneath the flange on said cover and opposite the aforesaid hinge butt, both of said butts being secured to said frame.

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