

Nov. 23, 1937.

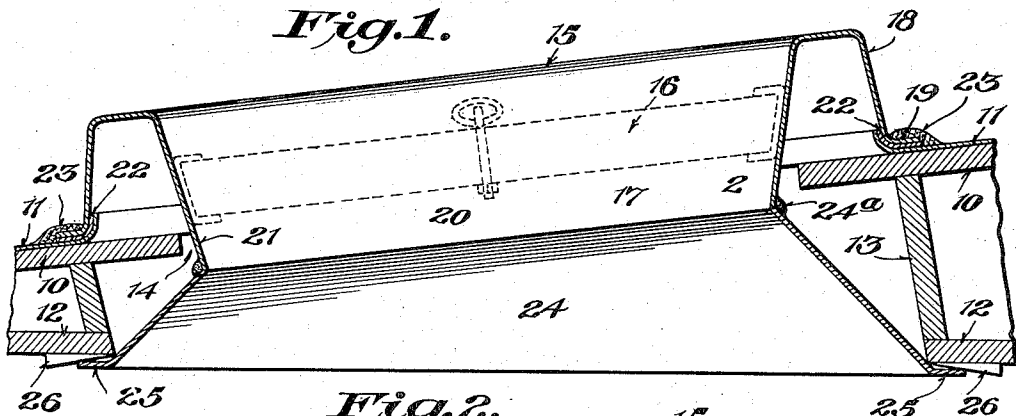
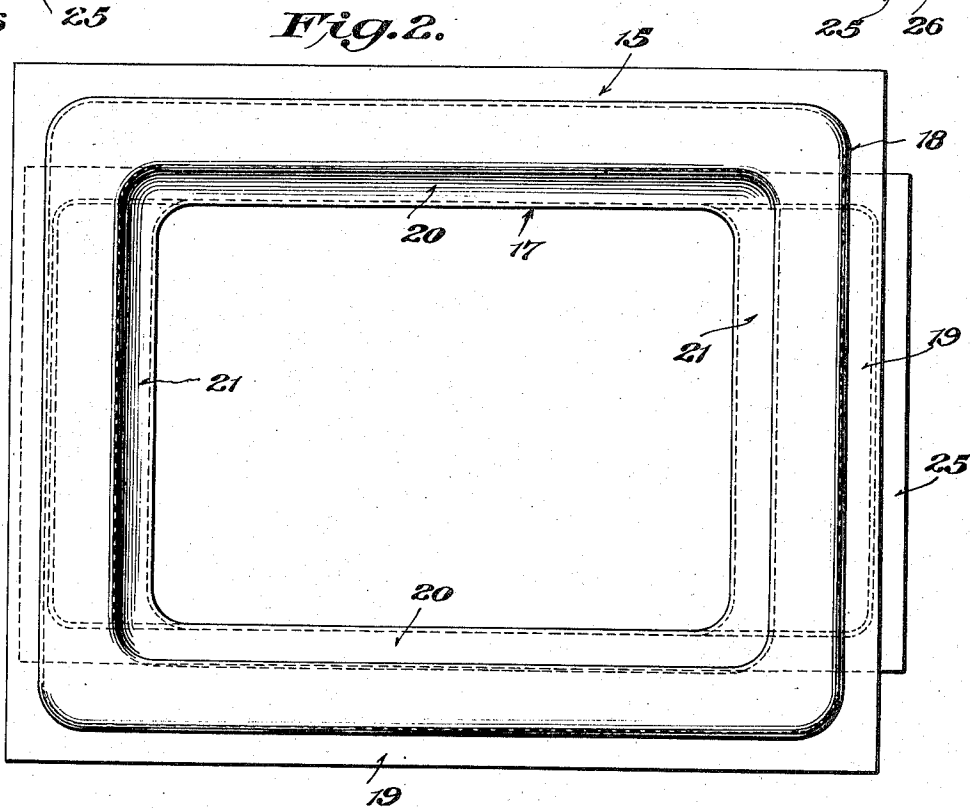
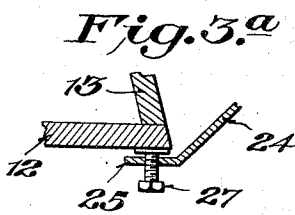
L. C. WILKOFF

2,100,129

HATCH FRAME

Filed Feb. 7, 1936

2 Sheets-Sheet 1



Louis C. Wilkoff *Inventor*

By *Emory Booth Holcomb & Miller*
Attorneys

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2 Sheets-Sheet 2

Fig. 3.

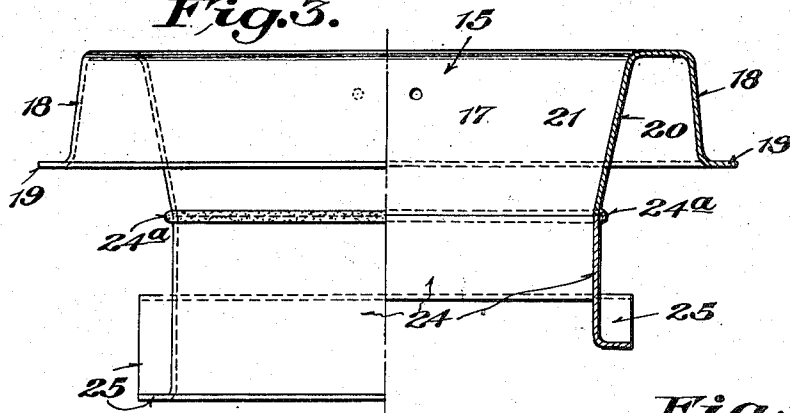


Fig. 4.

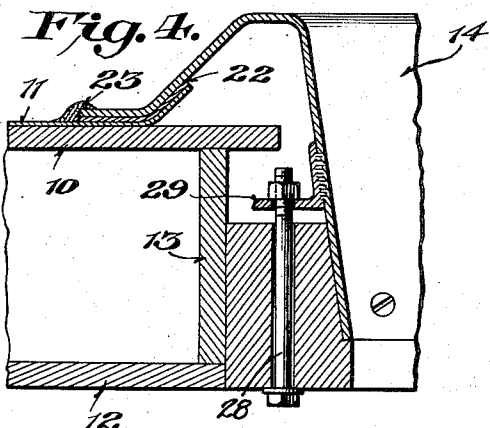


Fig. 5.

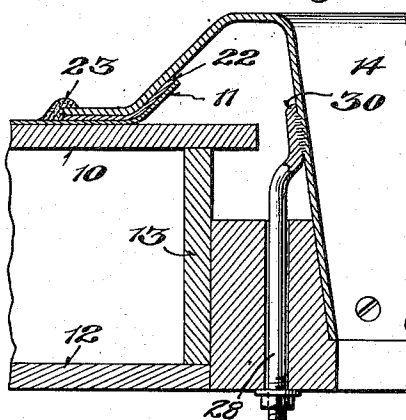


Fig. 6.

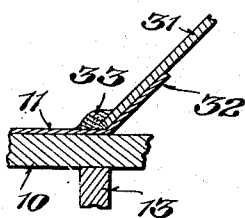


Fig. 7.

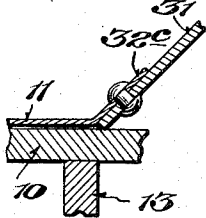
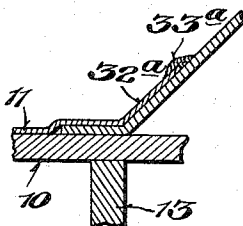


Fig. 8.



Inventor

Louis C. Wilkoff

By *Emory B. Burt, Wilkoff & Miller*
Attorneys

UNITED STATES PATENT OFFICE

2,100,129

HATCH FRAME

Louis C. Wilkoff, Youngstown, Ohio, assignor, by
mesne assignments, to P. H. Murphy Company,
a corporation of Pennsylvania

Application February 7, 1936, Serial No. 62,856

2 Claims. (Cl. 108-5)

The present invention relates to hatch frames, for example, the frame surrounding the hatch opening of a refrigerator car, and aims generally to improve and simplify the construction of such frames as well as the construction of the car roof.

In the construction of refrigerator cars, there usually is provided at one or both ends of the car ice compartments for containing and storing the ice. The ice is introduced into the compartment through a hatch opening in the roof, which opening is adapted to be sealed by a hatch plug.

Modern refrigerator cars are equipped with metal roof sheets and the hatch frames are usually bolted or riveted to the roof sheet. In both cases the roof is subject to leakage around the bolts or rivets, thus shortening the life of the car roof structure.

Furthermore the hatch frame must preferably be made of metal of sufficient thickness and rigidity, as, for example, from $\frac{1}{8}$ to $\frac{1}{4}$ inch steel plates, to adequately withstand the shock and wear on the wood framing of the car roof, when large cakes of ice are dumped through the hatch opening. The inner wall of the hatch frame must be relatively smooth, and preferably is of one-piece construction so as to smoothly and accurately fit the sealing hatch plug.

According to my invention I provide improved constructions of hatch frames and car roofs embodying hatch frames presenting a strong, stiff and rigid frame, preferably having a smooth one-piece well, and which may be securely attached and sealed to the roof sheets without requiring bolts, rivets or other types of fastenings, perforating the roof sheets. According to certain embodiments of the invention, the hatch frame may be secured in place and sealed to the roof sheets after the roof sheets have been applied to the car roof.

These and other important aims and objects of the invention will be apparent from the following description, when considered with the accompanying drawings illustrating certain preferred embodiments of the invention.

In the drawings:

Fig. 1 is a sectional view of a portion of a car roof and hatch frame constructed in accordance with one embodiment of the invention;

Fig. 2 is a plan view of the hatch frame;

Fig. 3 is a transverse sectional view of the hatch frame illustrated in Figs. 1 and 2;

Fig. 3a is a detail view illustrating a modified manner of clamping the hatch frame in place in the car roof;

Fig. 4 is a sectional view similar to Fig. 1, illustrating another embodiment of the invention;

Fig. 5 is a fragmental view illustrating a further modification;

Figs. 6, 7, and 8 are detail sectional views illustrating further modifications of the invention.

Referring more particularly to the drawings, modern refrigerator cars include a sheathing roof 10, metal roof sheet 11, ceiling 12, certain structural framework 13 between the sheathing and ceiling, and a hatch opening 14 adapted to receive a hatch frame 15 and to be closed by a suitable hatch plug 16. The framework 13 may be of a variety of forms and construction, and usually includes some kind of box-like frame around the hatch openings and the space between the ceiling and roof sheathing is usually filled with suitable insulating material.

According to the form of my invention illustrated in Figs. 1 to 3, I provide a hatch frame including a well 17, combing 18 and deck flange 19, of heavy metal, preferably wrought iron plate, from $\frac{1}{8}$ to $\frac{1}{4}$ inch wide in thickness, which frame is preferably made as by pressing from a single piece metal, to provide smooth, continuous, downwardly converging side and end walls, 20 and 21 respectively. By pressing the well 17 and at least a portion of the combing 18 from a single piece of metal, smooth side walls and uniform fillets are presented that will accurately receive and fit the hatch plug shown in dotted lines in Fig. 1.

The hatch frame thus constructed may be secured in position in the car, in a number of different ways according to the invention.

In the forms of invention illustrated in Figs. 1 and 5, the frame is securely held in place by applying a downward clamping pressure to the frame at some point or points spaced from and preferably located below the roof sheet. According to these forms of invention, a suitable waterproof joint is provided between the deck flange 19 of the frame and the metal roof sheet 11, which may comprise a strip or bitumen coated fabric 22 such as canvas, and a layer of suitable plastic deck cement 23.

According to the form of invention shown in Fig. 1, a downwardly and outwardly flaring skirt 24 may be attached to the lower edge of the well, as by welding along the edge as indicated at 24a, the lower edge of the skirt having an outwardly extending horizontal flange 25 adapted to underlie the ceiling 12. Suitable clamping means, as for example, wedge-shaped pieces 26, or clamping screws 27 (Fig. 3a), may be driven be-

tween the ceiling 12 and flange 25 to hold the hatch frame securely in place with the deck flange 19 pressed tightly against the roof sheet 11.

Alternately, the skirt 24 may be omitted, and frames may be held in place by means of a plurality of bolts 28 passing through the framework 13 and connected to the hatch frame 14 as by means of a support, such as an angle bar 29 (see Fig. 4) or the heads of the bolts may be flattened as at 30, and welded directly to the frame 14 as illustrated in Fig. 5.

In the embodiments of the invention thus described, it will be apparent that the hatch frame may be secured in position after the roof sheet 11 has been applied to the car, which is a distinct advantage and economy over the prior practice of riveting the frame to the roof sheet on the ground and then putting the roof sheet and frame in place on the car. Furthermore, the framework 13 need not be specially constructed to fit the hatch frame 15, and considerable space is provided between the framework 13 and hatch frame 15 that may be filled with insulation, or if unfilled, will provide a dead air insulating space. The construction has many advantages in the economy of constructing the refrigerator car.

In Figs. 6, 7, and 8 of the drawings I have illustrated other forms of connections between the hatch frame and roof sheet, which may be used either with or without the clamping means of Figs. 1, 4, and 5 as desired.

For example, it may be desired to permanently secure the combing of the hatch frame to the roof sheet 11, which may be effected by a seam weld. Thus, in Fig. 6 the combing of the hatch frame need not be formed with the deck flange 19 illustrated in Fig. 1, but may terminate in a downwardly sloping side or rim 31. The roof sheet is preferably formed with an opening and surrounding upwardly sloping walls 32 adapted to fit and underlie the downwardly sloping rim 31, and the two may be connected together advantageously by welding as for example, a seam weld 33. Such a construction is rivetless and watertight and when the frame is made of sufficiently heavy material, it may be satisfactorily used in many installations without other clamping means.

Alternately, the roof sheet walls 32^a (Fig. 8) may overlie the rim 31 of the hatch frame combing and/or the deck flange and may be securely connected together as by means of a seam weld 33^a along the upper edge of the walls 32^a.

Although the avoidance of rivets between the roof sheet and hatch frame are desirable, the invention is not of such restricted scope and this form of connection may be adopted without de-

parting from the spirit of the invention. When riveted connections are used, however, I prefer to rivet the upwardly inclined sloping walls 32^c of the roof sheet 11 to the inclined rim of the hatch frame combing, in the manner illustrated in Fig. 7. This avoids the use of vertical rivets and provides a sufficiently tight seal between the upper edge of the walls 32^c and the hatch frame as to avoid openings in which cinders may collect, which when wet, have a rapidly corrosive effect upon the metal of the frame or roof sheet.

Advantages of the invention reside in the simplicity of construction of the hatch frame as well as of the car roof structure surrounding the hatch frame, as well as the improved watertight connection between the hatch frame and the metal roof sheet of the car. By reason of the construction, the car roof frame is not subjected to shock and wear as in the case of many prior installations and need not be made to accurately accommodate the hatch plug.

The elimination of all vertical rivets or bolt connections between the hatch frame and car roof sheet also improves the watertightness of the roof as a whole, which is highly desirable in prolonging the life of the car roof structure.

Obviously, my invention is not to be restricted to the details described or as shown in the accompanying drawings which are intended as illustrative only.

I claim:

1. In combination with a refrigerator car and the like having a roof and ceiling spaced therefrom, an opening in said roof and ceiling, and a relatively heavy, rigid hatch frame positioned in said opening and including a one piece metal well having downwardly sloping side and end walls positioned within said roof and ceiling openings, and spaced from the walls thereof, and means for connecting the hatch frame to the roof at points spaced from the roof to provide a watertight imperforate joint therebetween.

2. In combination with a refrigerator car and the like having a roof and ceiling spaced therefrom, an opening in said roof and ceiling, and a relatively heavy, rigid hatch frame positioned in said opening and including a one piece metal well having downwardly sloping side and end walls positioned within said roof and ceiling openings, and spaced from the walls thereof, means for connecting the hatch frame to the roof at points spaced from the roof to provide a watertight imperforate joint therebetween, and means for connecting the lower edge of said well to the roof ceiling.

LOUIS C. WILKOFF.