Nov. 23, 1937. G. G. GILPIN 2,100,124

HATCH CONSTRUCTION

Filed Aug. 13, 1936 2 Sheets-Sheet 1

Fig. 1.

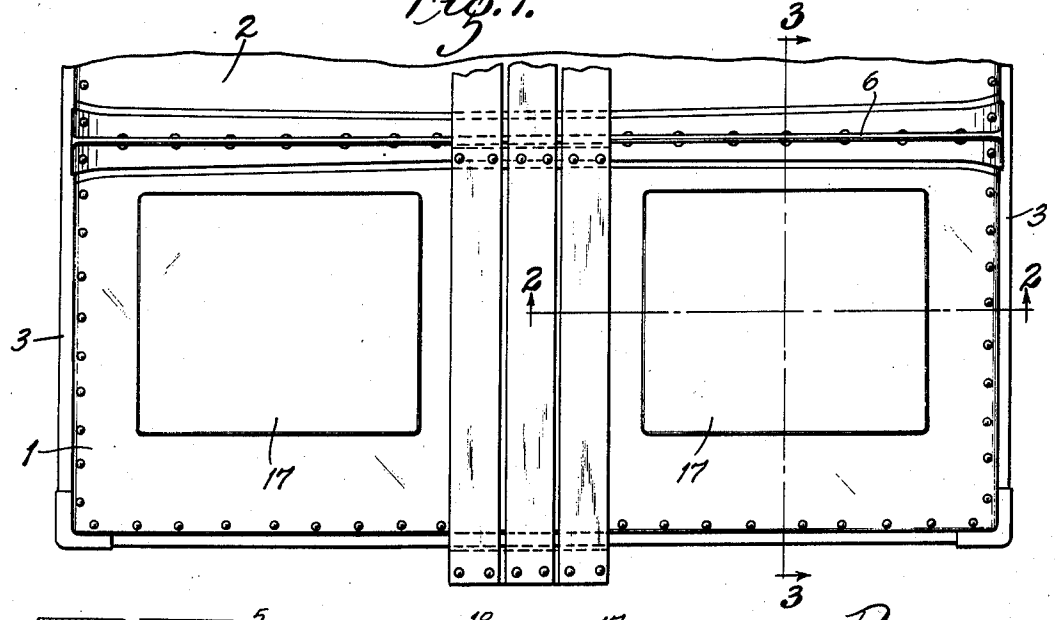


Fig. 2.

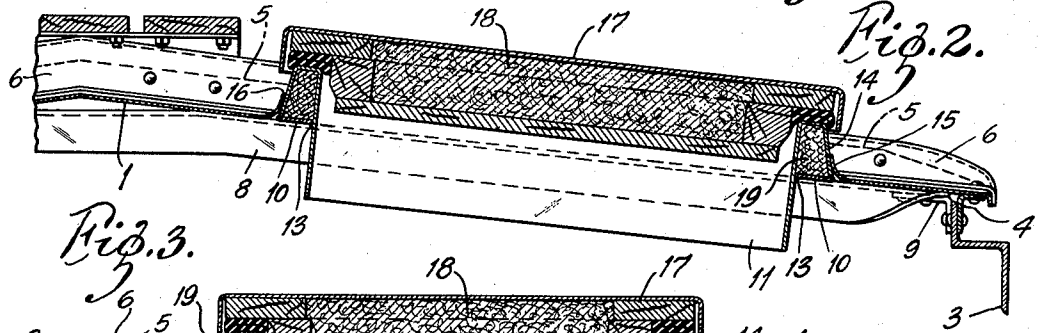


Fig. 3.

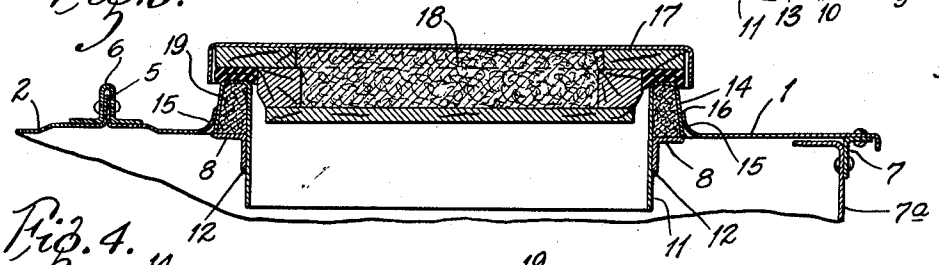


Fig. 4.

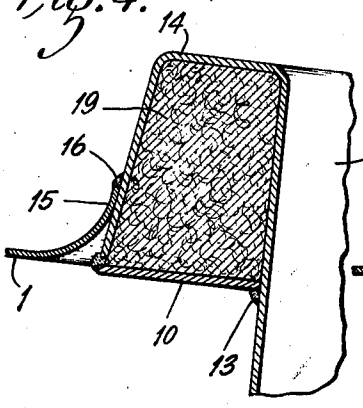
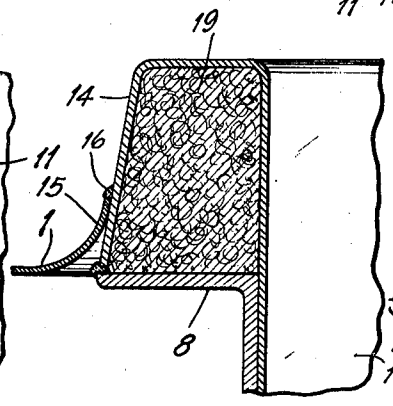


Fig. 5.



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Fig. 6.

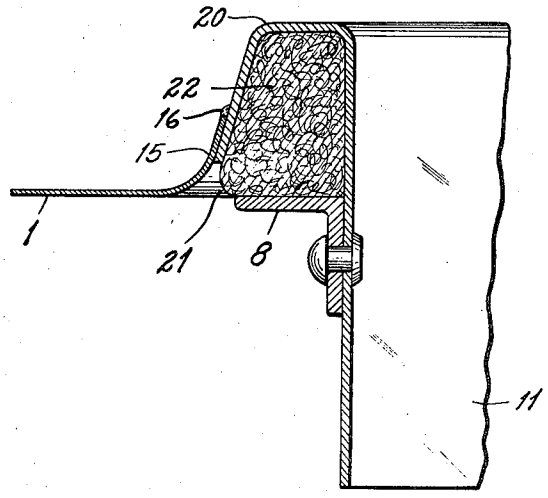


Fig. 7.

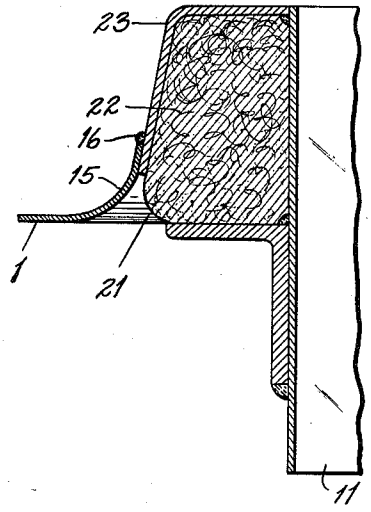


Fig. 8.

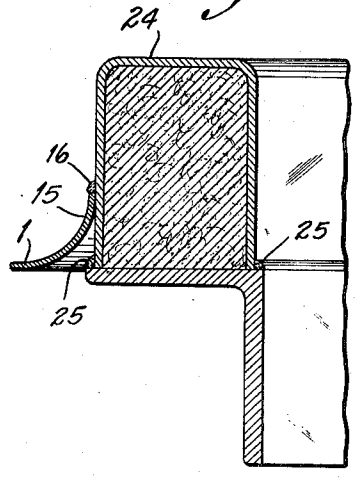
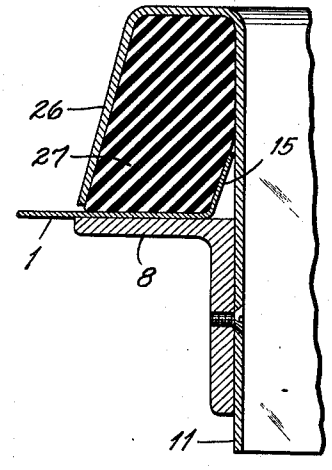


Fig. 9.



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UNITED STATES PATENT OFFICE

2,100,124

HATCH CONSTRUCTION

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Application August 13, 1936, Serial No. 95,790

26 Claims. (Cl. 108—5.4)

This invention relates to the hatchway construction of a metal car roof, particularly hatch constructions of the type wherein a metal hatch frame has an uninsulated upper portion disposed above the general level of the roof and closed by an uninsulated lid and a lower portion disposed below said level and forming a tapered seat for an insulated plug.

The invention has for its principal object to simplify such a hatch construction by dispensing with the separate tapered heat insulated plug and the special tapered seat heretofore commonly required. Another object is to provide a preassembled heat insulated hatch frame and carline assembly adapted for application to the car as a complete unit. Other objects are simplicity, cheapness and durability of construction. The invention consists in the hatch construction and in the parts and in the combinations and arrangements of parts hereinafter described and claimed.

In the accompanying drawings which form part of this specification and wherein like symbols refer to like parts wherever they occur,

Fig. 1 is a plan view of the end portion of a metal car roof provided with a hatch construction embodying my invention;

Fig. 2 is a vertical partial cross-section thereof on the line 2—2 in Fig. 1;

Fig. 3 is a vertical partial longitudinal section on the line 3—3 in Fig. 1;

Fig. 4 is an enlarged fragmentary section similar to Fig. 2 through one side of the hatch construction;

Fig. 5 is an enlarged fragmentary section similar to Fig. 3 through one side of the hatch construction; and

Figs. 6, 7, 8 and 9 are views similar to Fig. 5 illustrating five modified forms of hatch construction.

The metal car roof illustrated in the accompanying drawings comprises end and intermediate roof sheets 1 and 2, respectively, that extend from side plate 3 to side plate 3 of the car with their eaves ends supported on and riveted or otherwise secured to the outstanding top flanges of eaves angles 4, whose depending flanges are riveted or otherwise rigidly secured to the upstanding inner side flanges of said side plates. The end and intermediate roof sheets are provided along their adjacent margins with upstanding flanges 5 that are straddled by a seam cap 6 that is riveted or otherwise secured to said flanges and to the top flanges of the eaves angles 4. At the end of the car, the end sheet 1 is supported on and riveted or otherwise secured to the outstanding top flange of an end angle 7, whose depending flange is riveted or otherwise secured to the outstanding top flange of a metal end plate 7*a*.

As shown in Fig. 1, the roof is provided with one or more hatchways that lead downwardly into the interior of the car through the end roof sheet 1 and a framework located therebelow. Said framework comprises spaced parallel frame or carline members 8, which extend from side plate to side plate of the car with their ends rigidly secured thereto by suitable brackets 9, and spaced parallel cross frame members 10 that are secured to and flush with the tops of said carlines and cooperate therewith to define the hatchway opening in said framework. As shown in Figs. 1 to 5, the carlines 8 comprise metal angles disposed with one flange up and facing outwardly, and the cross members 10 are in the form of flat plates that cooperate with said flanges to form a continuous supporting surface around the hatchway opening in said framework.

Mounted in the hatchway opening defined by the carlines 8 and cross plates 10 is a metal hatch frame having parallel side walls that extend straight from top to bottom of said frame. Said frame extends downwardly through said opening with its carline engaging sides secured to the carlines preferably by welds 12 that extend along the lower edges of said carlines and with its two other sides secured to the cross plates 10 preferably by welds 13 that extend along the bottoms of said plates at the inner edges thereof. Said metal hatch frame also extends upwardly above the general level of the end roof sheet where it is provided immediately above the carline members and cross members with an exterior downwardly opening hollow rim portion 14 formed by a flange that extends outwardly from the upper end of said frame and thence downwardly and outwardly at an angle thereto with its lower end located adjacent to the outer edges of said members.

The end roof sheet 1 is provided above the opening defined by the frame members 8 and 10 with a hatch opening of substantially the same size and shape as the rim portion 14 of the metal hatch frame 11, and an upstanding flange 15 along the margin of said hatch opening that bears against the outer face of the depending outer wall of said rim portion with its upper edge rigidly secured thereto preferably by means of a weld 16 of added metal that extends continuously along the top edge of said flange. The metal hatch frame 11 is closed by means of a

suitable lid or cover 17 that rests upon the top of the hollow rim portion 14 of said hatch frame and is provided with a suitable heat insulating material 18. The hollow rim portion 14 of the hatch frame is also provided with a filler of any suitable heat insulating material 19.

In the constructions illustrated in Figs. 6 and 7, the outer wall of the hollow rim portion 20 of the hatch frame is spaced from the outer edges of the carline members and cross-members to provide an opening 21 through which a loose, fibrous heat insulating material 22 may be inserted either before or after the hatch and carline assembly is applied to the car. In the construction shown in Fig. 7, the top and outer walls of the hollow rim portion of the hatch frame are formed by a separate member 23 of angle-shaped section whose upper flange is secured by a weld to the upper end of the main body portion of said hatch frame.

In the construction illustrated in Fig. 8, angle shaped carline members and cross members form the lower portion of the hatch frame; and the hollow upper rim portion thereof is formed by an inverted channel-shaped member 24 which rests on and is closed by the lateral top flanges of said members. The inner wall of the rim member 24 may be welded, as at 25, to the carline and cross members; and the outer wall of said rim is disposed parallel to said inner wall, instead of being inclined downwardly and outwardly with respect thereto, thereby permitting the hatch frame to be applied after the hatch sheet is in place.

In the modification shown in Fig. 9, the upstanding flange 15, which surrounds the hatch opening in the end roof sheet is located inside of the downwardly opening hatch frame rim 26 adjacent to the inner wall thereof; and a rim filler of waterproof insulation 27 is held under compression between said sheet and rim and serves to prevent leakage therebetween and to prevent movement of said sheet relative to the hatch frame. Molded rubber or other resilient material may be used as a filler for the hatch frame rim and held under compression thereby. A rim filler of wood or rigid insulation material may also be used to stiffen and strengthen the hollow hatch frame rim.

The construction hereinbefore described has several advantages. The portion of the hatch frame located above the general roof level is insulated and is closed by an insulated cover, thereby materially reducing the transfer of heat through said portion and said cover into the interior of the hatch frame and thus dispensing with the separate tapered heat insulated plug and the tapered seat heretofore required therefor in the hatch frame. The carline and cross-frame members of the combined carline assembly and hatch frame supports serve to stiffen and strengthen the hatch frame rim and to retain the filler of insulation or other material therein. The complete carline and insulated hatch frame assembly may be assembled off the car and furnished for application to the car as a complete, preassembled unitary structure.

What I claim is:

1. A hatch construction for a car roof comprising a metal hatch frame having its upper portion disposed above the general level of the roof, heat insulating material for said upper portion of said hatch frame, and means located beneath said roof and secured to said hatch frame for retaining said heat insulating material in the upper portion thereof.

2. A hatch construction for a car roof comprising a metal hatch frame having a downwardly opening hollow rim portion disposed above the general level of the roof, a filler of heat insulating material in said hollow rim portion, and a metal frame secured to said hatch frame and having a portion disposed beneath said hollow rim portion for retaining said filler of heat insulating material therein.

3. A hatch construction for a car roof comprising a roof sheet having a hatch opening therein, a metal hatch frame having a downwardly opening hollow rim portion fitting in said opening and extending above the general level of the roof, a filler member in said hollow rim portion, and a frame located below said roof sheet for supporting said hatch frame in said hatch opening and for retaining said filler member in said hollow rim portion.

4. A hatch construction for a car roof comprising a roof sheet having a hatch opening therein, a metal hatch frame having a downwardly opening hollow rim portion fitting in said opening and extending above the general level of the roof, a filler of heat insulating material in said hollow rim portion, and means disposed beneath said roof sheet and extending across said hatch opening for supporting said rim portion in said hatch opening and for retaining said filler in said hollow rim portion.

5. A hatch construction for a car roof comprising a roof sheet having a hatch opening therein, a metal hatch frame having a downwardly opening hollow rim portion fitting in said opening and extending above the general level of the roof, a filler in said hollow rim portion, and means for closing the lower end of said rim portion to retain said filler therein.

6. A hatch construction for a car roof comprising a roof sheet having a hatch opening therein, a metal hatch frame having a downwardly opening hollow rim portion fitting in said opening and extending above the general level of the roof, a filler in said hollow rim portion, and means for closing the lower end of said rim portion to retain said filler therein, said rim closing means comprising spaced carline members and spaced cross-members connecting said carline members.

7. A hatch construction for a car roof comprising a roof sheet having a hatch opening therein, a metal hatch frame having a downwardly opening hollow rim portion fitting in said opening and extending above the general level of the roof, a filler of loose heat insulating material in said hollow rim portion, and means located beneath said rim portion for retaining said filler therein, an opening being provided between said retaining means and the outer wall of said hollow rim to permit insertion of the loose heat insulating material in said rim.

8. A hatch construction for a car roof comprising a roof sheet having a hatch opening therein, a metal hatch frame having a downwardly opening hollow rim portion fitting in said opening and extending above the general level of the roof, a filler of loose heat insulating material in said hollow rim portion, and means located beneath said rim portion for retaining said filler therein, said means comprising spaced carline members and spaced cross-members connecting said carline members, an opening being provided between said retaining means and the outer wall of said hollow rim to permit insertion of the loose heat insulating material in said rim.

9. A hatch construction for a car roof com-

prising a roof sheet having a hatch opening therein, a metal hatch frame having a downwardly opening hollow rim portion fitting in said opening and extending above the general level of the roof, a filler of heat insulating material in said hollow rim portion, means for supporting said rim portion in said hatch opening and for retaining said filler in said hollow rim portion, said supporting and rim closing means comprising spaced carline members and spaced cross-members connecting said carline members, and means for rigidly securing said hollow rim portion to said members.

10. A hatch construction for a car roof comprising a roof sheet provided with a hatch opening and an upstanding flange surrounding said opening, a metal hatch frame having a closed hollow rim portion fitting in said opening, means for securing said flange to said rim portion, and a filler of heat insulating material enclosed in said rim portion.

11. A metal hatch construction comprising a roof sheet having a hatch opening therein and an upstanding flange surrounding said opening, a metal hatch frame having a hollow downwardly opening rim portion overhanging the flanged marginal portion of said opening, and a filler in said hollow rim portion in contact with said sheet around the flanged opening therein.

12. A hatch construction for a car roof comprising a frame arranged to form a hatch opening, a hollow downwardly opening member surrounding said opening and supported on and closed by said frame, and a filler retained in said hollow member by said frame.

13. A hatch construction for a car roof comprising a frame arranged to form a hatch opening, a hollow downwardly opening member surrounding said opening and supported on, secured to and closed by said frame, and a filler of heat insulating material retained in said hollow member by said frame.

14. A carline and insulated hatch frame assembly adapted for application as a complete unit to a car roof, said assembly comprising spaced carline members connected by spaced cross-members, said members cooperating to form a hatch opening, a metal hatch frame rigid with said members and having a portion fitting in said opening and a downwardly opening hollow rim portion overhanging said members and closed thereby, and a filler in said hollow rim portion and retained therein by said members.

15. A carline and insulated hatch frame assembly adapted for application as a complete unit to a car roof, said assembly comprising spaced carline members connected by spaced cross-members, said members cooperating to form a hatch opening, a metal hatch frame rigid with said members and having a portion fitting in said opening and a downwardly opening hollow rim portion overhanging said members and closed thereby, and a filler of heat insulating material in said hollow rim portion and retained therein by said members.

16. A carline and insulated hatch frame assembly adapted for application as a complete unit to a car roof, said assembly comprising spaced carline members connected by spaced cross-members, said members cooperating to form a hatch opening, a metal hatch frame rigid with said members and having a portion fitting in said opening and a downwardly opening hollow rim portion overhanging said members and closed thereby, and a filler of loose heat insulating material in said hollow rim portion and retained therein by said members, the outer wall of said rim portion being spaced above said members to provide a filler opening for said loose heat insulating material.

17. A carline and insulated hatch frame assembly adapted for application as a complete unit to a car roof, said assembly comprising spaced carline members connected by spaced cross-members, said members cooperating to form a hatch opening, a hollow downwardly opening rim member supported on and secured to said members around the opening defined thereby, and a filler in said hollow him portion and retained therein by said members.

18. A carline and insulated hatch frame assembly adapted for application as a complete unit to a car roof, said assembly comprising spaced carline members connected by spaced cross-members, said members cooperating to form a hatch opening, a hollow downwardly opening rim member supported on and secured to said members around the opening defined thereby, and a filler of heat insulating material in said hollow rim portion and retained therein by said members.

19. A hatch construction for a car roof comprising a roof sheet having a hatch opening therein and an upstanding flange along the margin of said hatch opening, a metal hatch frame having a downwardly opening hollow rim portion fitting in said opening and secured to the flange thereof, a filler of heat insulating material in said hollow rim portion, and means secured to said metal hatch frame for closing the lower end of said hollow rim portion to retain said filler therein.

20. The combination with a car roof having a framework defining a hatch opening of a metal hatch frame extending through said opening, the upper portion of said hatch frame having a hollow rim portion whose bottom rests on and is closed by said framework, and a filler of heat insulating material in said hollow rim portion.

21. A car roof construction comprising a metal roof sheet having a hatch opening therein, a metal hatch frame disposed in said opening and having an exterior downwardly opening rim portion with the lower portion of its outer wall located adjacent to the edge of said opening, a filler in said rim portion, a closure plate for said rim portion for retaining said filler therein, and a weatherproof joint between said portion of said outer wall and the edge of said hatch opening.

22. A car roof construction comprising a metal roof sheet having a hatch opening therein, a metal hatch frame disposed in said opening and having an exterior downwardly opening rim portion with the lower portion of its outer wall located adjacent to the edge of said opening, heat insulating material mounted in said rim portion, a closure plate for said rim portion for retaining said insulating material therein, and a weld for securing said portion of said outer wall to said roof sheet around the edge of said hatch opening.

23. A car roof construction comprising a metal roof sheet having a hatch opening therein, a metal hatch frame disposed in said opening, a weld for securing said hatch frame to said roof sheet around the edge of the hatch opening therein, and spaced frame members extending alongside of said hatch frame and beneath said roof sheet around the hatch opening therein, said frame members being spaced away

from said roof sheet and said hatch frame adjacent to said weld.

24. As an article of manufacture, a roof sheet and insulated metal hatch frame assembly adapted for application to a car roof as a complete preassembled unit, said roof sheet having a hatch opening therein and said hatch frame being disposed in said hatch opening and having a closed box-like hollow rim portion having a weatherproof connection with said sheet around said hatch opening.

25. As an article of manufacture, a metal hatch frame adapted for application to a car roof as a complete preassembled unit, said frame having a closed hollow rim portion, and a filler enclosed in said rim portion.

26. As an article of manufacture, a heat insulated metal hatch frame adapted for application to a car roof, said frame having a hollow downwardly opening rim portion, heat insulating material disposed entirely within said rim portion, and a closure for said rim portion for retaining said insulating material therein.

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