United States Patent

[11] 3,587,476

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[21] Appl. No. **759,856**
[22] Filed **Sept. 16, 1968**
[45] Patented **June 28, 1971**

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[54] **REINFORCED FIBERGLASS HATCH COVER**
10 Claims, 6 Drawing Figs.

[52] **U.S. Cl.** ..... **105/377,** 52/309, 280/31(P)
[51] **Int. Cl.** **B61d 39/00**
[50] **Field of Search** ..... 280/31 (P) (Inquired); 52/309, 53 (Inquired); 296/28.2; 220/(fiberglass); 105/377

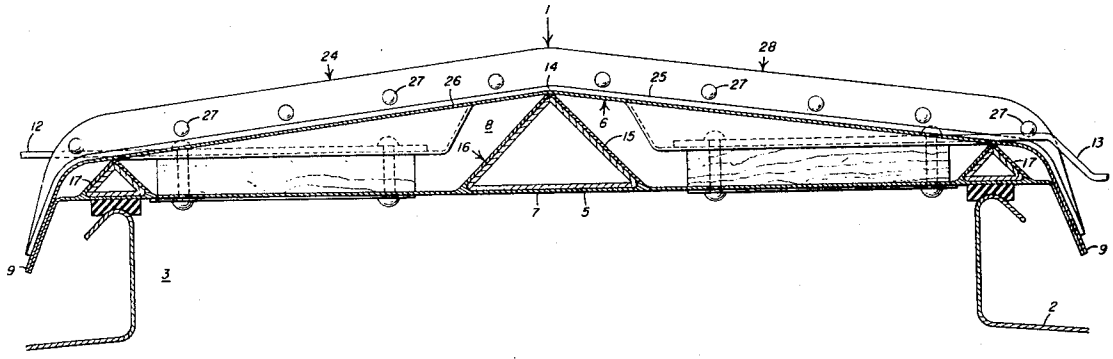
[56] **References Cited**

UNITED STATES PATENTS

2,607,302	8/1952	Nystrom	105/377
2,970,347	2/1961	Massopust	105/377
3,260,224	7/1966	Pettit et al.	105/377
1,880,085	9/1932	Gilpin	52/53
2,652,787	9/1953	Keleher	105/377
3,429,083	2/1969	Voros	52/309

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ABSTRACT: A hollow fiberglass hatch cover for a roof hatch of a covered railway hopper car formed of separately molded top and bottom fiberglass panels and reinforced longitudinally by internal trussing and laterally by external ribbing connecting adjoining sections of the top panel for combining great strength and durability with very light weight.



PATENTED JUN 28 1971

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SHEET 1 OF 2

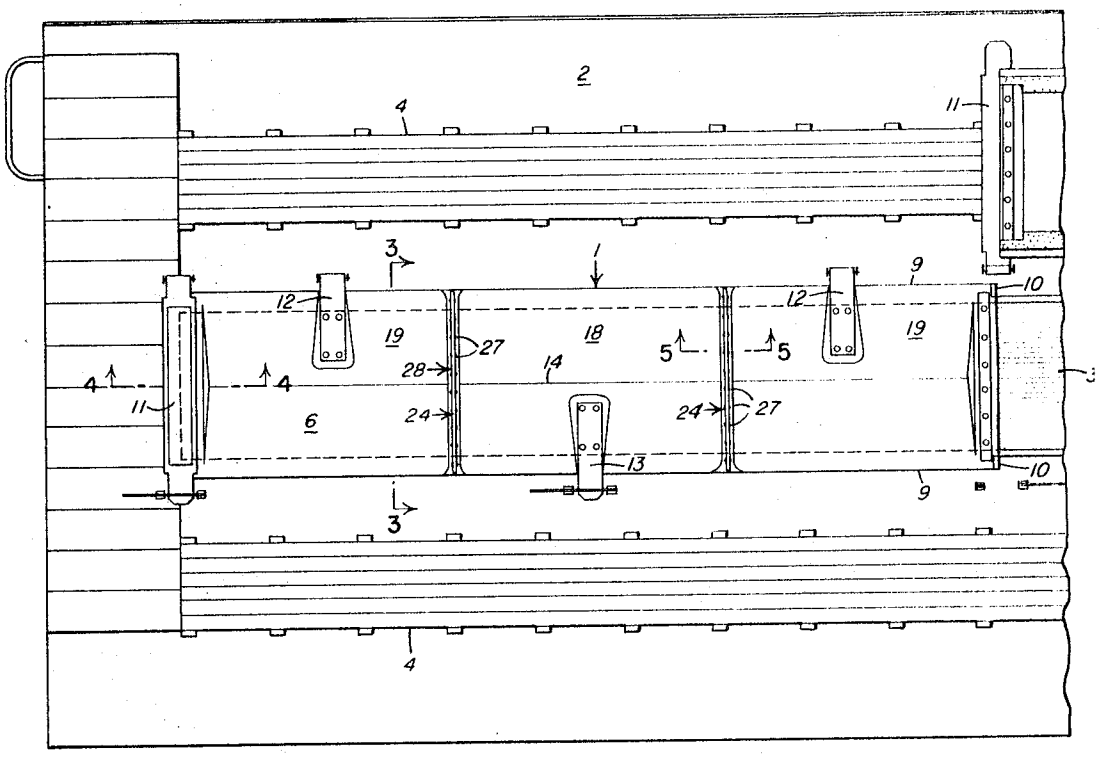


FIG. 1

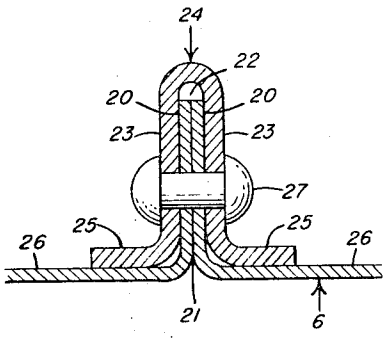


FIG. 5

FIG. 6

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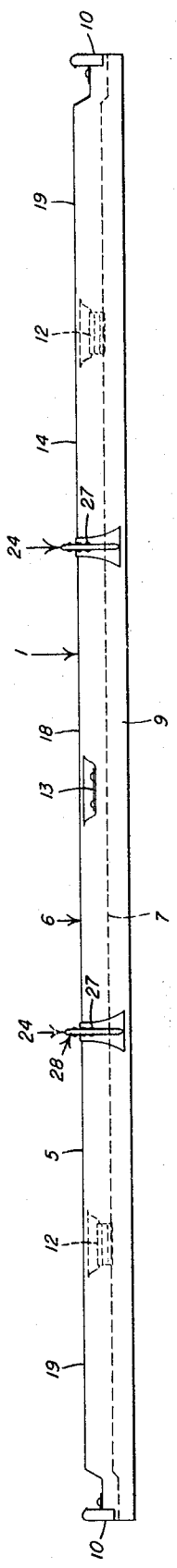


FIG. 2

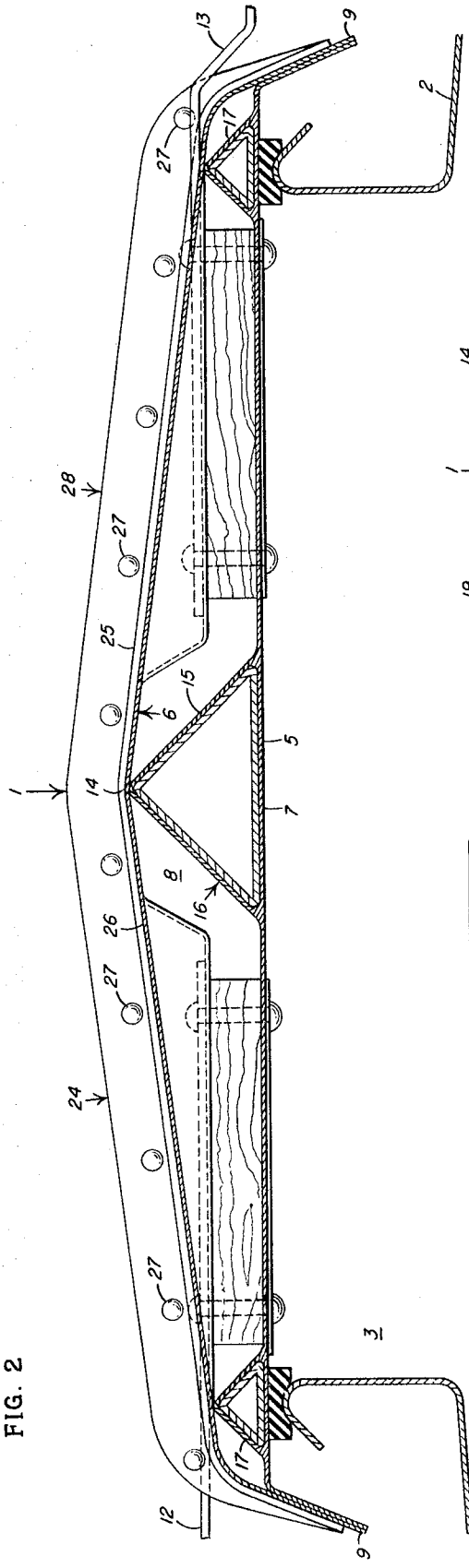


FIG. 3

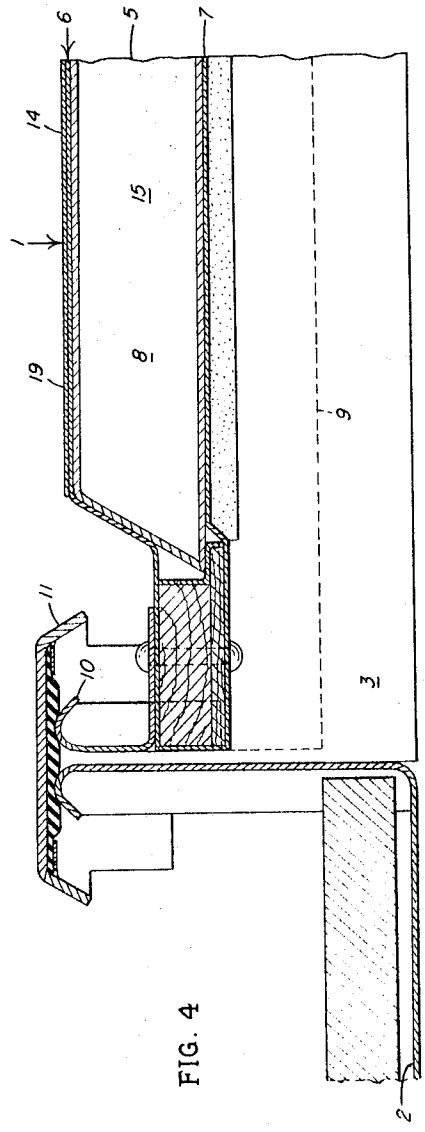


FIG. 4

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REINFORCED FIBERGLASS HATCH COVER

BACKGROUND OF THE INVENTION

As pointed out in my copending application entitled "-Fiberglass Hatch Cover," Ser. No. 746,787 filed July 23, 1968, previously proposed fiberglass hatch covers for roof hatches of covered railway hopper cars, while sufficiently light to be handled by one man, generally lacked the rigidity of metal covers and were prone to cracking when thrown open against an adjoining walkway. In the invention of that application, those problems were solved with a reduction in the overall weight by forming the hatch cover of separately molded top and bottom fiberglass panels, the top panel double sloping with a central ridge engaging the adjoining walkway on opening and the hatch cover reinforced by longitudinally extending internal trussing including a central truss bonded to both members and backing the ridge. The present invention is an improvement on the hatch cover of that application.

SUMMARY OF THE INVENTION

The primary object of the present invention is to provide an improved hollow fiberglass hatch cover reinforced longitudinally by internal trussing and laterally by external ribbing.

Another object of the invention is to provide an improved fiberglass hatch cover having a fiberglass body formed of top and bottom fiberglass panels and in which external ribbing on the top panel not only provides lateral reinforcement but also protects the cover from damage when thrown open against an adjoining walkway.

Otherwise similar to the fiberglass hatch cover disclosed in my copending application, the preferred hatch cover of this invention has its top panel divided longitudinally into fiberglass sections having integral upstanding flanges on their adjoining ends and connects each section to an adjoining section by an external, upstanding and laterally extending rib member receiving and secured to the upstanding flanges thereof. Conforming in contour to the top panel, each rib member preferably is footed and made of steel or like metal and the lateral reinforcement it provides, in conjunction with the longitudinal reinforcement provided by the internal trussing, permits the thickness of the top panel sections to be so reduced as more than compensate for the added weight of any rib members.

Other objects and features of the invention will appear hereinafter in the detailed description, be particularly pointed out in the appended claims and be illustrated in the accompanying drawings, in which:

FIGURE DESCRIPTION

FIG. 1 is a partial plan view of a covered railway hopper car having a continuous center roof hatch closed in sections by a plurality of the improved hatch covers of the present invention in their preferred form;

FIG. 2 is a side elevational view of one of the hatch covers of FIG. 1;

FIG. 3 is a vertical sectional view on an enlarged scale taken along lines 3–3 of FIG. 1;

FIG. 4 is a fragmentary vertical sectional view on the scale of FIG. 3, taken along lines 4–4 of FIG. 1;

FIG. 5 is a fragmentary vertical sectional view on a further enlarged scale, taken along lines 5–5 of FIG. 1; and

FIG. 6 is an isometric view on a smaller scale of the rib member of FIG. 5.

DETAILED DESCRIPTION

Referring now in detail to the drawings in which like reference characters designate like parts, the improved fiberglass hatch cover of the present invention generally follows the construction of that of my copending application, differing therefrom primarily in the construction of the top panel.

As in that application, the improved hatch cover, designated as 1, is designed to be mounted on a roof 2 of a covered railway hopper car (not otherwise shown) at a side of a roof hatch 3 therein for hinging or swinging transversely of the roof about a horizontal, longitudinally extending axis between positions to open and close the hatch. Permissively of other shape, the hatch cover 1 preferably is oblong, with the elongation longitudinal of the roof 2, and adapted to close either a section of a continuous or an individual oblong hatch extending longitudinally of the roof and centered laterally thereon between a pair of longitudinal walkways 4.

Like that shown in my copending application, the preferred hatch cover 1 has a hollow oblong body 5 formed of top or upper and bottom or lower fiberglass panels 6 and 7, respectively. Separately molded and made of a glass fiber reinforced plastic, now known generally as "fiberglass," with the preferred plastic an exothermally setting resin, the top and bottom panels 6 and 7 are bonded together along their extremities and therebetween are spaced and bound or enclose the body's hollow interior 8. The body 4 at opposite sides has downturned side flanges 9 and on its ends mounts rain deflectors 10, which in the cover's closed position are covered by the usual manner by hinged hoods 11. For mounting on the roof 2, the cover suitably has on one side a pair of longitudinally spaced hinge butts 12 and on the other a locking tongue 13, which, with the rain deflectors 10, suitably are individually backed by internal spacer blocks 14 seated in the hollow interior 8.

The improved hatch cover 1 follows that of my copending application in the preferred shaping of the top panel 6 as a double sloping member, sloping downwardly toward each side from a longitudinally extending, laterally centered or center ridge 14 and the ridge is backed by a center truss or reinforcing member 15 of the body's longitudinally extending, internal trussing or reinforcing 16. Also preferably included in the trussing 16 are side trusses 17 in and adjacent opposite sides of the hollow interior 8 and each of the laterally spaced center and side trusses extends substantially the length of the body 5, between and spacing and bonded to and rigid with the top and bottom panels 6 and 7, and preferably is triangular in section, based on the bottom panel and made of the same fiberglass as the panels.

Like the hatch cover of my copending application in the foregoing respects, the improved hatch cover 1, as previously mentioned, differs therefrom in the construction of the top panel 6. Instead of being a one piece or continuous member, the top panel 6 of this invention is divided or sectioned longitudinally into a plurality of fiberglass sections or subpanels, three of substantially equal length being preferred, one, a center section 18 and the others, end sections 19. Each section has at each end adjoining another section an integral, upstanding fiberglass end flange 20, facing and bearing or abutting against the adjoining, confronting or contiguous end flange of the next or adjacent section. Extending laterally or transversely of the top panel 6, each pair of adjoining or abutting flanges 20 forms a correspondingly extending joint or seam 21. For closing these joints, each pair of abutting flanges is received in a vertically directed, downwardly opening slot or aperture 22, between vertically directed legs 23 of a rib or ribbed cap member 24 of inverted U-shape. Preferably footed or having oppositely outstanding or extending feet or bottom flanges 25 at the lower ends of the legs 23 for bearing against or engaging upper surfaces 26 of the sections 18 and 19 adjacent the joints 21, each rib member 24 is mounted externally on and upstands substantially vertically from and conforms to the contour of the combined upper surface of the top panel 6 beyond the end flanges 18, and extends laterally or transversely of both that panel and the hatch cover 1 as a whole substantially to the ends of the related, associated or adjoining joint 21. Each rib member 24 is suitably secured, fixed or clamped to or rigid with the adjoining pair of end flanges 20, as by rivets 27 extending therethrough and its legs 23, and any possible leakage through the intervening joints 21 can readily

be prevented by applying car cement or other suitable sealant to the outsides of the flanges or insides of the legs or both before the flanges are inserted in the slot **22**.

Most conveniently secured to the top panel **6** before the latter is bonded to the bottom panel **6**, each of the rib members **24** must be rigid and for durability should be made of galvanized steel or other suitable corrosion-resistant material. However, given the necessary rigidity, the rib members, by together providing the hatch cover with transverse or lateral external ribbing **28**, will give the cover as a whole a lateral rigidity or stiffness comparable with that of a far heavier metal hatch cover, in addition to the longitudinal rigidity or stiffness provided by the internal trussing **16**. Moreover, by reducing the longitudinally unsupported span of the top panel **6** to the lengths of the sections **18** and **19** between and beyond them, the longitudinally spaced rib members **24**, in cooperation with the limitations of the laterally unsupported span by the center and side trusses **15** and **16** to the spaces between them, enable the thickness of the top panel to be reduced by at least 10—15 percent relative to that of my copending application and the consequent weight saving in fiberglass more than compensates for or counterbalances the added weight of the ribbing. Thus, a hatch cover constructed in accordance with this invention and in the usual length of around 11½ feet, can have a weight, including hardware, of about 40 pounds, as against the around 50 pound weight of the laterally unreinforced hatch cover of my copending application of the same size. Not only do they serve as lateral reinforcing or stiffening members, but the rib members **24**, by projecting above the central ridge **14** in the cover's closed position, also serve as the contact between the hatch cover and an adjoining walkway when the cover is thrown open thereagainst and, by spreading the force of the impact over the substantial area of the top panel engaged by their feet **25**, effectively preventing cracking of the fiberglass.

It should be understood that the described and disclosed embodiment is merely exemplary of the invention and that all modifications are intended to be included that do not depart from the spirit of the invention and the appended claims.

I claim:

1. A hatch cover for a roof hatch of a covered railway hopper car comprising a fiberglass body having a hollow interior, said body including upper and lower fiberglass panels spaced intermediate extremities thereof and together enclosing said interior, internal trussing inside said interior, said trussing being connected to both of said panels and extending and reinforcing said body in one direction, and external ribbing extending and reinforcing said body in a different direction.

2. A hatch cover according to claim **1**, wherein the body is oblong and reinforced longitudinally by the trussing and laterally by the ribbing.

3. A hatch cover according to claim **2**, wherein the cover is hinged to a roof of the car at a side of the hatch, the top and bottom fiberglass panels are separately molded and bonded together at extremities thereof, and the lateral ribbing is fixed to and upstands from said top panel.

4. A hatch cover according to claim **3**, wherein the top panel is divided longitudinally into a plurality of sections, and the ribbing is secured to and joins said sections.

5. A hatch cover according to claim **4**, wherein each top panel section has at an end adjoining another section an integral upstanding flange abutting the flange of the other section, and the ribbing includes for each pair of abutting flanges an upstanding rib member receiving and secured to and covering a joint between said pair.

6. A hatch cover according to claim **5**, wherein each rib member is rigid and of inverted U-shape for receiving the related pair of flanges between legs thereof and extends across and conforms in contour to the top panel.

7. A hatch cover according to claim **6**, wherein the top panel is double sloping from opposite sides of a horizontally extending laterally centered ridge, the trussing includes a center truss member between and bonded to the top and bottom panels and backing said ridge, and each rib member extends upwardly beyond said ridge and the end flanges for contact with an adjoining walkway on the roof on swinging of the cover to open position.

8. A hatch cover according to claim **7**, wherein each rib member has oppositely outstanding feet at bottoms of the legs thereof and engaging upper surfaces of adjoining panels over a substantial area for distributing over said area the force resulting from the impact of the rib member with the walkway.

9. A hatch cover according to claim **8**, wherein the top panel sections are of substantially equal length and there are a multiplicity of the sections and a plurality of the rib members.

10. A hatch cover according to claim **9**, wherein the center truss member is a fiberglass member, and the rib members are metal members.