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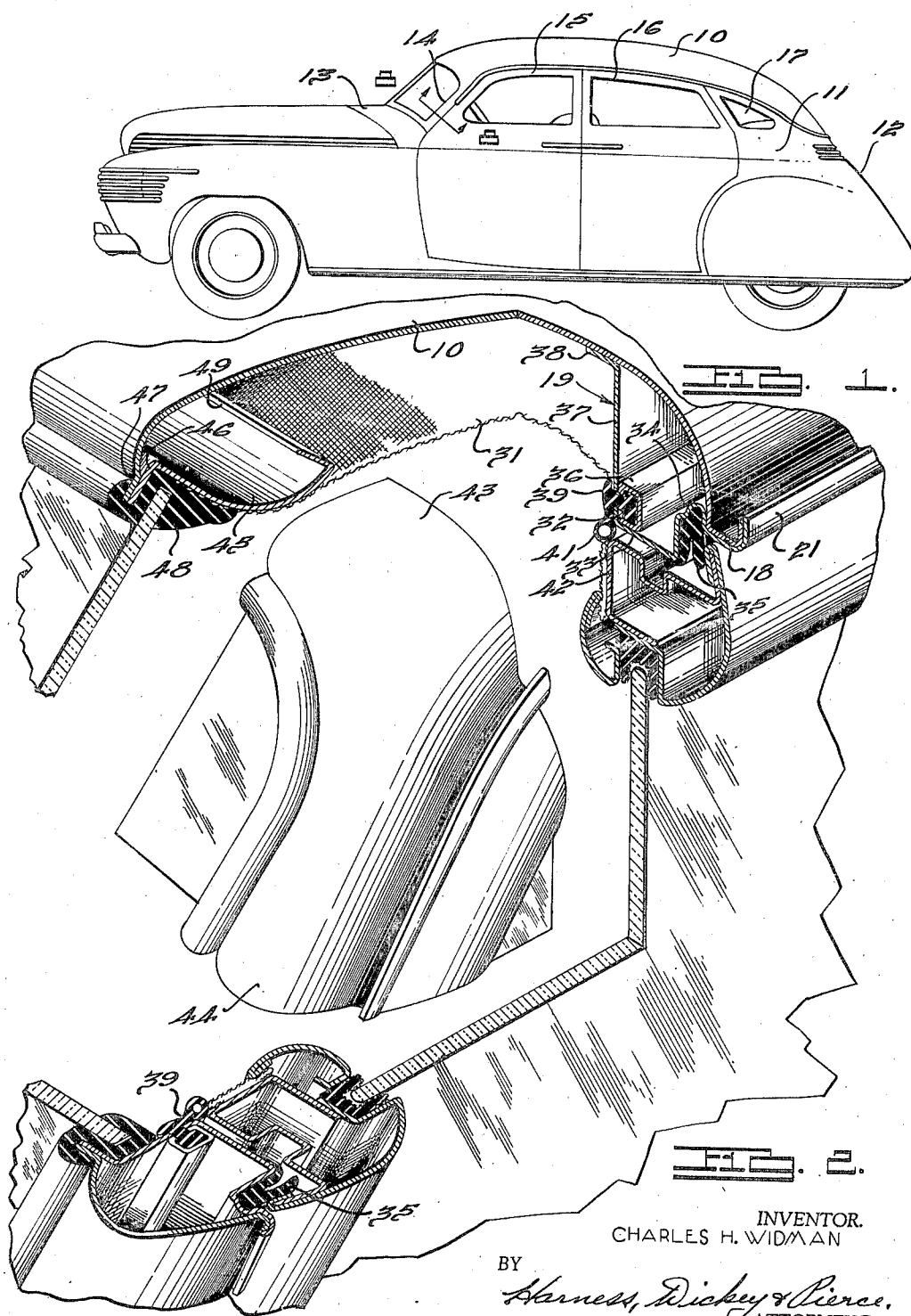
C. H. WIDMAN

2,247,457

ROOF RAIL CONSTRUCTION

Filed March 7, 1938

4 Sheets-Sheet 1



INVENTOR.
CHARLES H. WIDMAN

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Harness, Dickey & Pierce,
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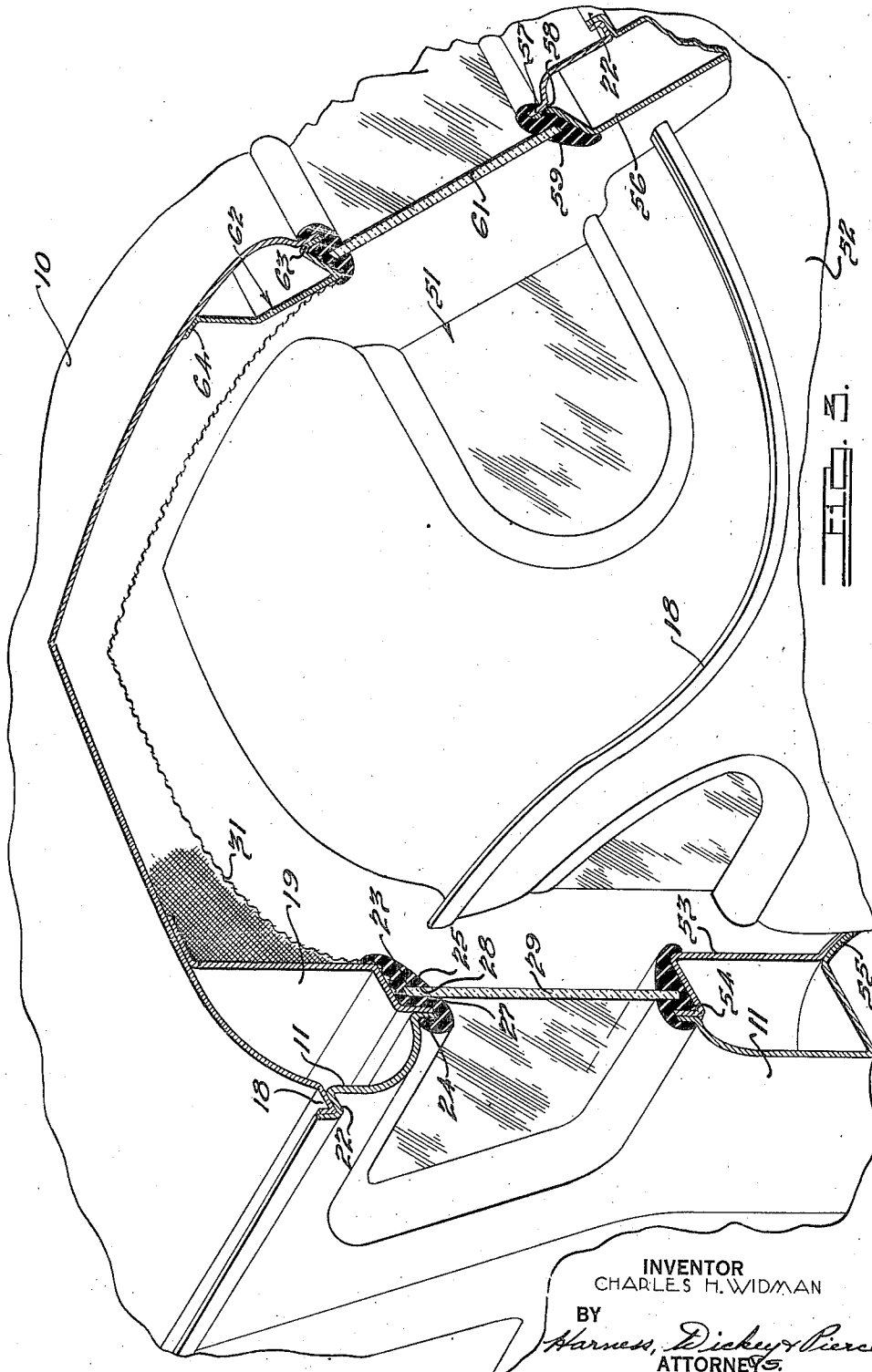
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4 Sheets-Sheet 2



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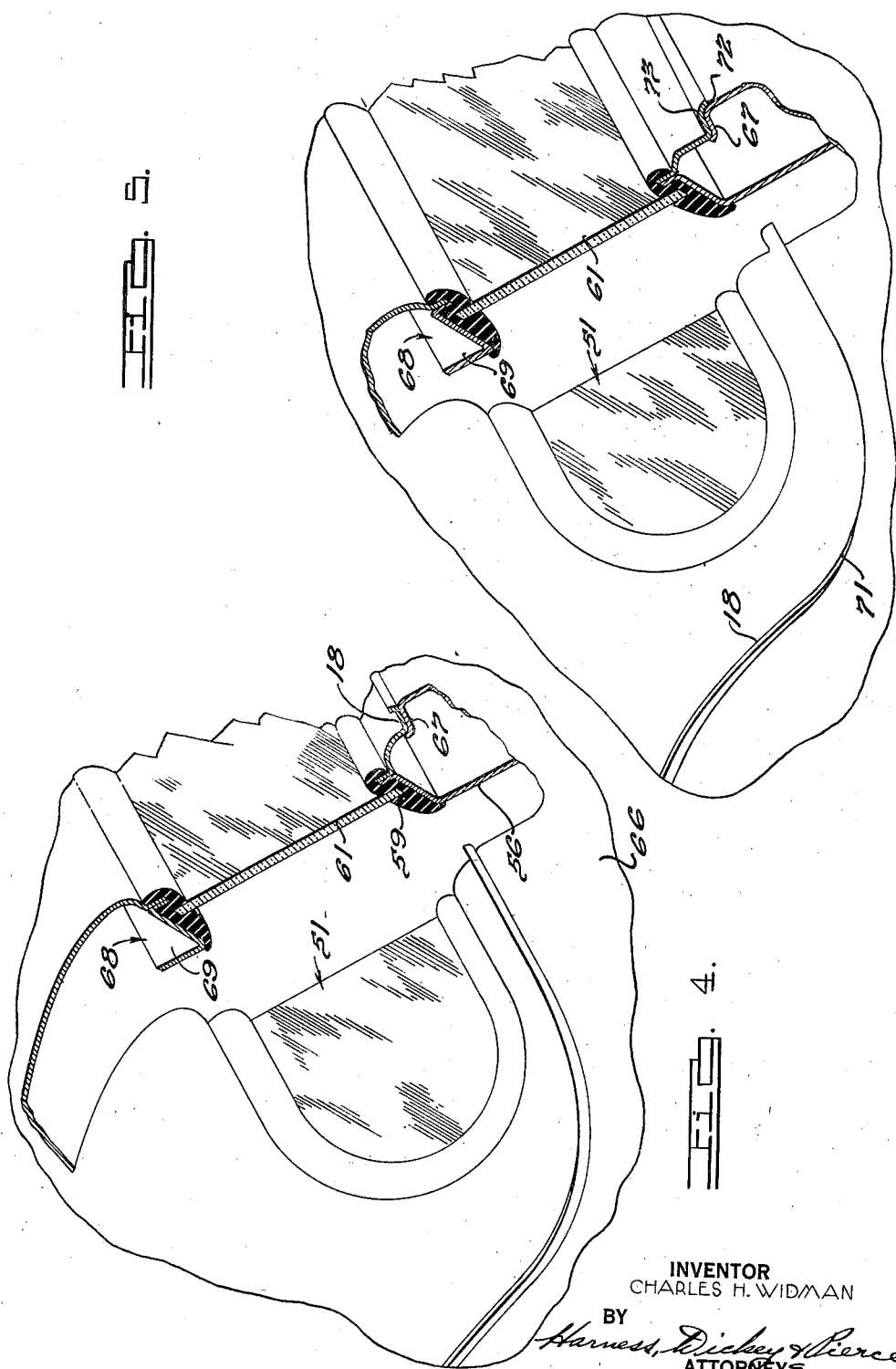
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4 Sheets-Sheet 3



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4 Sheets-Sheet 4

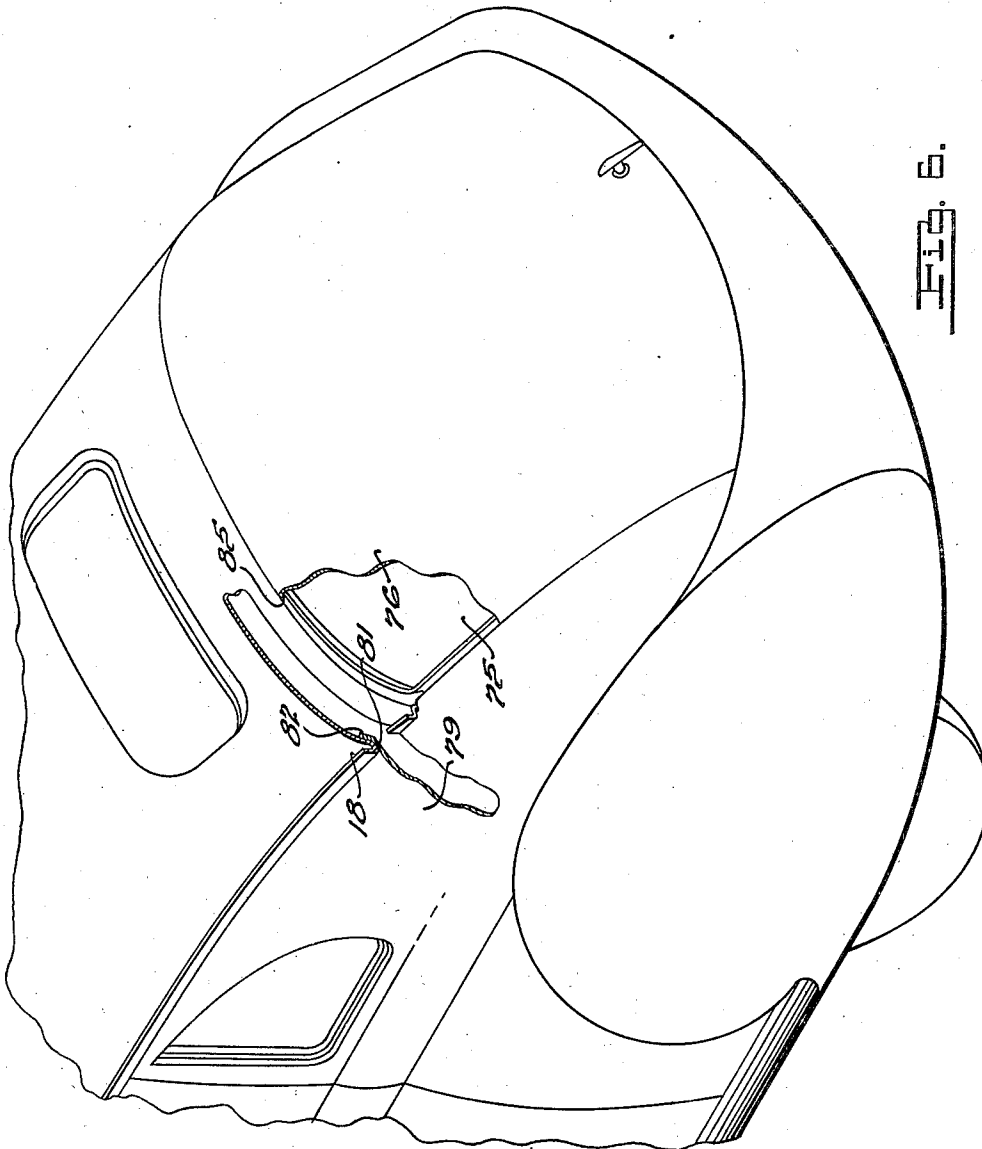


FIG. 6.

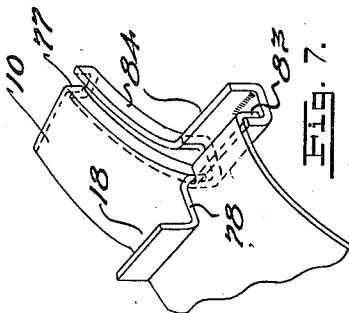


FIG. 7.

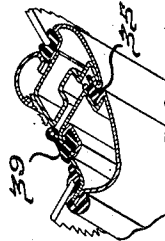


FIG. 8.

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UNITED STATES PATENT OFFICE

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ROOF RAIL CONSTRUCTION

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Application March 7, 1938, Serial No. 194,252

1 Claim. (Cl. 296—137)

My invention relates to vehicle bodies, and particularly to bracing means for bodies employed at the roof edges and about the body openings to form a frame structure for strengthening the body.

Various methods have been employed for forming panels to desired shapes and joining the panels together by welding, flanging, or by other means to construct a unit body. Dies were utilized for forming the sheets of metal to the desired shape, for trimming the edges of the metal and for reversely bending the edges around the window and door openings. The dies for producing the reverse bending were always very expensive and oftentimes such reverse bending weakened the metal, in some cases to such a degree that the panels became useless.

In practicing my present invention, I form the panels in a conventional manner and so shape adjacent panels that the mating edges lie face to face with each other in a position to be joined in a simple manner such as by spot welding. About the window openings the joined flanges extend inwardly of the opening in a position to receive a resilient finish strip in which the glass is mounted. This strip not only forms a support for the glass, but constitutes a molding for covering the flange and for finishing the material about the opening.

The top panel is preferably flanged to provide a trough at the marginal edge, which rests within a trough-like projection on the side panel and likewise may be joined by spot welding. The trough may extend entirely around the rear quarter edge of the roof panel to conduct water to the rear portion thereof. A sill joins the roof panel with the side panel forming a box section structure and a bracing for the roof panel. This arrangement not only adds material strength to the roof structure and to the body in general, but also eliminates any vibration or drumming which would otherwise occur to the large unitary panel which forms the top of the body.

The roof rail joins with the body side panels about the window opening and is extended at the door openings to join directly with the roof panel. The rail at the door opening is preferably provided with an inwardly presented channel in which the inner trim material may be secured by a resilient element which constitutes an inner seal for the door opening. A channel is also provided at the outer marginal door jamb edge for retaining a sealing element at the outer edge of the door. The roof rail, with the channels and sealing elements, extend for-

wardly and are curved downwardly at the pillar to form a box section structure therewith. A header reinforcing element joins the side rails and the front edge of the roof panel at the windshield opening and provides a reinforcement for the header panel of the body. The panel and element are flanged and joined to provide the projecting flange for receiving the resilient strip provided about the windshield opening. A similar reinforcing element is provided about the side and rear quarter window openings to form the projecting flanges defining the opening.

Accordingly, the main objects of my invention are: to provide a vehicle body comprising a plurality of panels having projecting flanges by which they are joined together to form a unit construction; to provide a body made of a plurality of panels with bracing elements having projecting flanges which join with the side and top panels to form box section structure therewith; to provide a top rail for a vehicle body which extends along the top of the body and downwardly along the pillars thereof, and which joins with a header brace extending laterally of the body, substantially all of which forms a box section structure with the roof and pillar; to provide a top rail for a vehicle body which is of angular section and which is joined to the roof panel at the side and top to form a box section therewith; to provide a roof rail for a vehicle body having an inner and outer channel therein for receiving and supporting elements for sealing the door at the interior and exterior of the body; to provide a roof panel for a body having a drip channel at the peripheral edge thereof which nests within a similar channel provided in the roof rail of the body; to provide roof rails at the sides of the body which extend upwardly and are welded or otherwise secured to the top of the roof panel as well as the outer edge thereof; to provide a reinforcing element about the rear windows of the body which extend inwardly of the body and then outwardly to join with the roof panel to provide a box section structure about the window opening; and in general, to form a body with a top and side panels joined by projecting flanges and braced by reinforcing elements which form box section structures with the sides, roof and pillar elements to provide a simplified construction which has increased strength and all of which is economical of manufacture.

Other objects and features of novelty of my invention will be either specifically pointed out or will become apparent when referring, for a

better understanding of my invention, to the following description, taken in conjunction with the accompanying drawings, wherein:

Figure 1 is a view in elevation of a vehicle body embodying features of my invention;

Fig. 2 is an enlarged broken sectional view of the front top corner of the vehicle body illustrated in Fig. 1;

Fig. 3 is an enlarged broken sectional view of the upper rear corner of the vehicle body illustrated in Fig. 1;

Fig. 4 is a broken view of structure, similar to that illustrated in Fig. 3, showing a modified form of my invention;

Fig. 5 is a broken view of structure, similar to that illustrated in Fig. 4, showing a further form which my invention may assume;

Fig. 6 is a view of structure, similar to that illustrated in Fig. 3, showing another form which my invention may assume;

Fig. 7 is an enlarged broken view of the junction of the panel elements illustrated in Fig. 6; and,

Fig. 8 is a sectional view of the structure illustrated in Fig. 1, taken on the line 8—8 thereof.

The body illustrated in Fig. 1 comprises in general, a roof panel 10, a side panel 11, a rear panel 12, a cowl panel 13, and pillars 14. A front door 15 and a rear door 16 are hinged to the body at each side and a side quarter window 17 is provided within the side panels 11.

In Fig. 2, I have illustrated the roof panel 10 as being provided with a drip channel 18 at the side peripheral edges which mate with a roof rail 19 at the door openings and with the side panels 11 rearwardly thereof. The roof rail 19 at the outer edge is provided with an upwardly presented channel 21 in which the drip channel 18 of the roof is nested and secured in fixed relation by welding or other means. The side panel 11 is provided with a ledge 22 on which the channel 18 of the roof rests to be secured thereto by welding or other means. At this point, the roof rail 19 is flanged downwardly at 23 to join with a flange 24 defining the opening of the side quarter window 17.

The flanges 23 and 24 are spot welded or otherwise secured together and the projecting wall thereof is finished by a flexible trim element 25. The trim element 25 is preferably made of rubber and trims the metal defining the window opening and is retained in position through the projection of the flanges 23 and 24 in a slot 27 in the element. An additional slot 28 is provided in the finish element 25 for receiving a window glass 29 which is retained in sealed relation within the opening. The roof trim material 31 may be supported in the usual manner by listing strips, the side edges being pasted or otherwise secured to the roof rail 19.

At the door opening, the rail 19 embodies a web or jamb portion 32 which is extended upwardly at 33 at the outside of the body and then bent to form the channel 21 heretofore referred to. A downwardly presented channel 34 is thereby provided in which a sealing strip 35 is clamped, adhered to, or otherwise secured therein. On the inner side of the web 35 the rail is bent upwardly and reversely bent upon itself and further formed to provide the channel element 36 having the opening thereof presented inwardly of the body. The rail extends upwardly at 37 and flanges outwardly at 38, the latter flange engaging the roof panel 10, and is welded or otherwise secured thereto. It is to be under-

stood that the rail may be formed from a unit strip of material, or may be made in a number of sections which are secured together.

The top cloth 31 is drawn within the channel 36 and may be retained therein by the inner rubber sealing element 39 which is forced within the channel. The element 39 has a downwardly extending hollow lip portion 41 which forms an inner seal for the frame 42 of the door 16. The rail 19, as above described, extends forwardly to the top corner 43 of the body, and then continues downwardly along the pillar 44 to be joined therewith by the engagement of mating flanges as above described. The drip channel 18 follows the contour of the corner and continues downwardly for a portion of the length of the pillar. Thereafter, as illustrated in Fig. 8, the roof rail and pillar are provided with outwardly and inwardly directed flanges respectively, which engage each other and are welded together. The sealing strips 35 and 39 are continued down along the pillar and seal the door along the top and front jamb face in the conventional manner.

A header reinforcing element 45 has a downwardly presented flange 46 which mates with a flange 47 on the front edge of the roof panel 10, which defines the marginal edge of the windshield opening. The flanges are secured together by spot welding or other means, and form a ledge for receiving a windshield supported finish strip 48, similar to the strip 25 above described with relation to the quarter window 17. A flange 49 may be provided on the opposite end of the reinforcing header element 45 to provide further strength thereto. The element extends entirely across the front end of the panel and is joined to the roof rail 19 provided at each side thereof. It is to be understood that the element may be projected and joined to the top portion of the roof panel as illustrated relative to the rail 19.

In Fig. 3, the channel 18 is illustrated as extending around the terminal edge of the top panel 10 about the rear quarter window 51 provided in the panel. The side panels 11 may be a unit element extending across the rear portion 52 of the vehicle, or the rear deck portion 52 may be a separate panel joined to the two side panels 11. Either are conventional constructions, and it is to be understood that one or a plurality of panels may therefore, be employed to form the lower sides and rear portion of the body. The sides of the body, as pointed out above, continue the extending ledges 22 and a similar ledge is provided in the rear deck portion 52 upon which the rear terminal edge 18 of the roof panel 10 rests and is secured by welding or other means.

It is to be understood that a reinforcing panel element 53 is provided on the inner side of the body adjacent to the side panels 11, as illustrated in Fig. 3. Such a panel 53 extends about the quarter window opening 17 and joins with the roof rail 19 at the side top edges of the window opening. The panel 53 has a flange 54 which mates with the flange 24 on the side panel 11 to form a box section structure therewith and a resulting flange about the opening for receiving the trim molding 25. The panel 53 extends downwardly and joins with the wall 55 of the wheel housing at the side of the body. Forwardly and rearwardly of the housing the panel extends downwardly to join the panel 11 and form a sill portion therewith. The panel 53 may extend across the rear deck portion or a rear inner panel 56 may be employed to join with the

rear deck panel 52 to form a rear sill or terminal portion in the conventional manner.

A flange 57 defines the marginal edge of the opening of the rear quarter window 51 and joins with a flange 58 on the inner panel 56 to provide the projecting flange for receiving the molding element 59 which supports the rear window glass 61 in the manner specified hereinabove relative to the side quarter window 17. The panel 56 may extend entirely around the window opening, having the upper portion thereof joined with the roof, or a separate element 62 may be provided having a flange 63 joined to the flange 57 at the top of the window opening and also a flange 64 which engages and is secured to the roof panel 10. This upper portion may be joined to the panel 56 and/or joined to the rear terminal ends of the roof rails 19.

In this manner, box section structures formed with the exterior panels along the side of the body and at the top quarters, all of which are interconnected to form a unitary structure. The joiner of the inner structure in this manner with each other and with the exterior side and roof panel inwardly of the edges thereof produces a very light construction which is extremely rigid and which eliminates vibration in the unitary top panel. The mating flanges are readily welded and at the window openings provide a ledge for receiving and supporting the window glass and the trim and retaining element thereof.

In Figs. 4 and 5, I have shown further forms of rear quarter constructions, including bracing means therefor which may be substituted for that employed in the body illustrated in Fig. 3. In Fig. 4, the lower rear deck 66 is flanged inwardly at 67 to provide a ledge upon which the channel 18 at the terminal end of the roof panel rests and to which it is secured by welding or other means. The top element 68 which may be a portion of the inner panel 56 or may be a separate element, similar to the element 52 with the exception that the upwardly extending flange 69 thereof terminates short of the roof panel and does not form a box section structure therewith. The element 68, however, is joined preferably at its lateral edges to the roof rails 19 to form a unitary structure therewith.

In Fig. 5, the channel element 18 terminates at

71 at the side of the body, the terminal edge of the roof 73 rearwardly thereof being flanged downwardly at 72 to extend over the ledge 67 as clearly illustrated. Otherwise the construction is similar to that illustrated in Fig. 4.

In Fig. 6, I have shown a further form of construction wherein the rear portion of the body contains a compartment 75 having a deck door 76 mounted thereon in the conventional manner. In this construction the rear terminal edge of the roof panel 10 is flanged downwardly at 77 inwardly of the side terminal end 78 of the channel 18. The side panel 79 is projected inwardly at 81 and flanged upwardly at 82 to form a ledge for receiving the channel edge 13 of the roof panel. The side panel beyond the terminal edge 78 of the roof panel projects downwardly at 83 to be disposed in continuation of the flange 77 at the terminal edge of the roof panel 10. A trough 84 extends around the marginal edge of the opening defining the compartment 75 to receive a flange 85 provided about the edge of the deck door 76. The trough and deck door construction follows the conventional form and will not be described further. It is to be understood that suitable bracing elements are provided about the rear and side quarter windows, in the manner as clearly specified hereinabove relative to structure illustrated in Figs 1 to 5 inclusive.

While I have described and illustrated several embodiments of my invention, it will be apparent to those skilled in the art that various changes, omissions, additions and substitutions may be made therein without departing from the spirit and scope of my invention, as set forth in the accompanying claim.

What I claim is:

In a vehicle body, the combination with a roof panel having a channel at the side edge thereof which extends downwardly and terminates near the rear deck opening, side panels engaging said trough and supporting said roof panel, the rear end of the roof panel and the side panels beyond the end of said trough being flanged downwardly, and a trough element defining the deck opening into which the flanges at the rear of the roof and side panels project.

CHARLES H. WIDMAN.