Dec. 14, 1937. C. D. BONSALL 2,102,455

CAR ROOF

Filed March 14, 1936

Fig. 1.

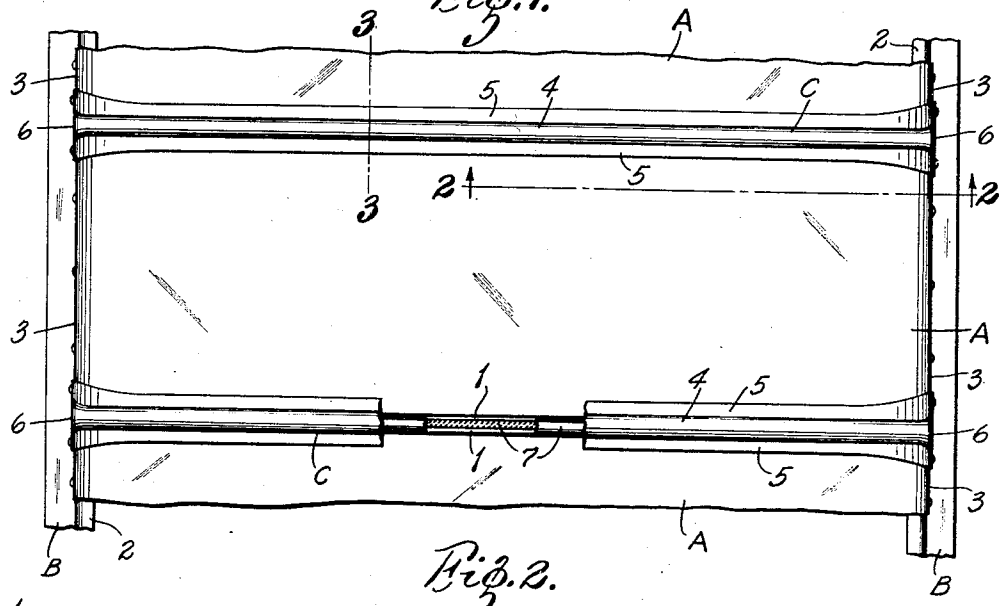


Fig. 2.

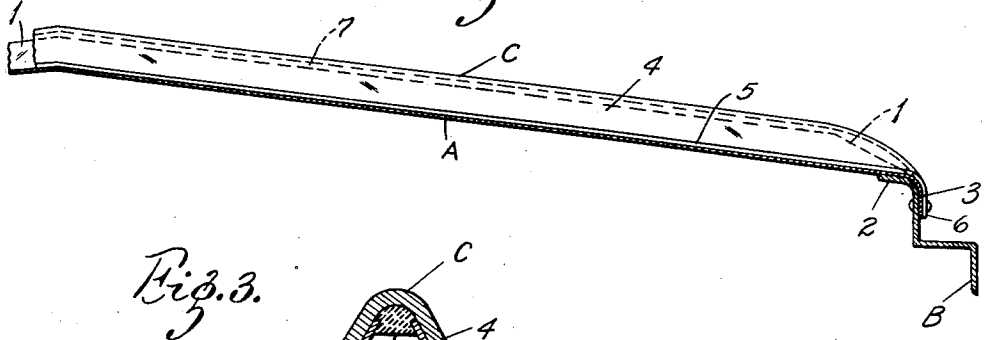


Fig. 3.

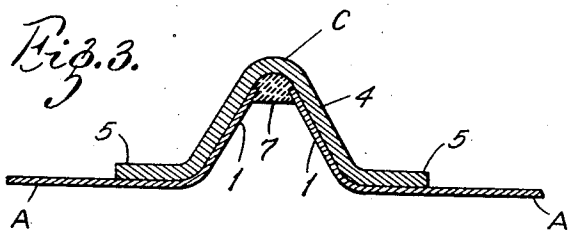
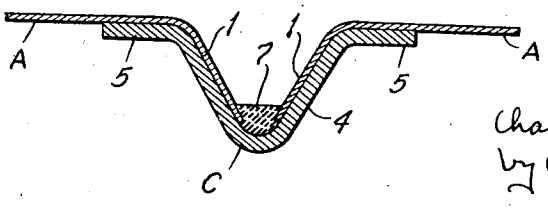


Fig. 4.



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CAR ROOF

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Application March 14, 1936, Serial No. 68,939

7 Claims. (Cl. 108—5.4)

This invention relates to car roofs of the type wherein the roof sheets extend from side plate to side plate and are provided with upstanding flanges along their adjacent sides that are straddled by and rigidly connected to seam covers that function as outside carlines. The principal objects of the present invention are to devise a strong and neat welded seam construction and an economical and practical process for welding said construction. The invention consists in the welded seam construction and process hereinafter described and claimed.

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

Fig. 1 is a plan view of a portion of a car roof embodying my invention,

Fig. 2 is a transverse section through one-half of the roof on the line 2—2 of Fig. 1,

Fig. 3 is an enlarged vertical cross-section, through one of the roof seams on the line 2—2 of Fig. 1; and

Fig. 4 is a cross-section similar to Fig. 3 showing the position of the parts during the welding operation.

In the accompanying drawing, my invention is shown in connection with a car roof comprising roof sheets A that extend from side plate B to side plate B and are provided along their adjacent side margins with upstanding seam flanges 1 straddled by a channeled seam cover C that extends from side plate to side plate and functions as a carline. The roof sheets are supported on inwardly extending flanges 2 provided therefor along the tops of the side plates and have depending eaves flanges 3 that overhang and are riveted or otherwise rigidly secured flatwise to the outer side faces of said side plates.

The seam cover C comprises a hollow upstanding rib 4 that is preferably provided at the lower edges of its side walls with outstanding base flanges 5 that rest on body portions of the roof sheets. The seam cover is provided at its ends with depending flanges 6 that cover the joints between the depending eaves flanges 3 of adjacent roof sheets and are secured to the side plates by the securing rivets for said eaves flanges. The ends of the rib 4 of the seam cover are closed by curving its end portions downwardly and merging them into the plane of the base flange 5 of said cover at the ends thereof.

The rib 4 of each seam cover is preferably of inverted V-shaped section; that is, said rib has a rounded top portion and downwardly diverging side walls; and the adjacent roof sheet flanges 1 straddled by said rib are preferably spaced apart and converge upwardly in conformity with and abut flatwise against the downwardly diverging side walls thereof. The seam flanges terminate short of the rounded top portion of the seam cover and are rigidly connected thereto by a continuous weld 7 of added metal that fills the space between the upper edges of said flanges and the underside of the rounded top portion of the cover and preferably also extends between the upper margins of said flanges, thereby rigidly connecting said cover and flanges together.

The process for welding the roof sheets A to the seam cover C consists in placing the seam cover on a bench with its hollow rib 4 opening upwardly, placing adjacent roof sheets on the side flanges 5 of the seam cover with their side flanges 1 extending downwardly into said rib in contact with the inner faces of the side walls thereof, and then filling the bottom of said rib with weld metal to or slightly above the level of the lower edges of said seam flanges, all as shown in Fig. 4. The welded roof is then inverted and applied to the car as a unit.

The hereinbefore described welded roof construction has several advantages. The welding together of the sheets and seam covers in an inverted position off the car permits the sheets and seam covers to be accurately assembled and quickly and easily welded together. The edges of the seam flanges serve as gages to determine the depth of the weld metal; and the designer can regulate the depth of such metal so as to mass a considerable amount of such metal at the top of the seam cover where it is most efficient in taking care of stresses to which the roof is subject in service. That is, due to the continuity of the weld and its distance above the bodies of the roof sheets the weld raises the neutral axis of the seam construction and increases the capacity of the roof for carrying vertical load. The location of the weld entirely within the seam cover also tends to improve the appearance of the roof.

What I claim is:

1. In a car roof, a seam construction comprising a carline having a hollow longitudinal rib, roof sheets below said carline and provided along their adjacent margins with flanges that extend into said rib, and a weld of added metal located against the inside top surface of said rib above the general surface of the sheets and securing said flanges to said rib whereby said weld metal increases the capacity of the seam construction for resisting compression stress due to vertical load.

2. In a car roof, a seam construction comprising a carline having a hollow longitudinal rib, roof sheets below said carline and provided along their adjacent margins with flanges that extend into said rib, and a weld of added metal located against the inside top surface of said rib and extending below the tops of said flanges and securing said flanges together and to said rib, said weld being of sufficient depth and thickness to appreciably raise the neutral axis of said seam construction.

3. In a car roof, a seam construction comprising roof sheets with upstanding flanges, a seam cover straddling said flanges and a weld of added metal located against the inside top surface of said seam cover and securing said flanges to said seam cover said weld metal being above the general level of the sheets and of sufficient mass to appreciably raise the neutral axis of the seam construction.

4. In a car roof, a seam construction comprising roof sheets with upstanding flanges, an imperforate seam cover straddling said flanges, and a weld of added metal located against the inside top surface of said seam cover and extending below the tops of said flanges and securing the upper portions of said flanges together and to the upper portion of said seam cover said weld metal being above the general level of the sheets and of sufficient mass to appreciably raise the neutral axis of the seam construction.

5. In a car roof, a seam construction comprising roof sheets having the adjacent margins spaced apart and provided with upstanding flanges, a seam cover straddling said flanges with its inside top surface spaced above said flanges, and a weld of added metal in contact with the upper side margins and edges of the flanges and with the inner surface of the seam cover from one sheet flange to the other.

6. In a car roof, a seam construction comprising a seam cover, roof sheets with upstanding flanges located inside said seam cover with the upper edges terminating short of the top thereof, and a weld of added metal located inside of said seam cover and filling the space between the top of said seam cover and the upper edges of said flanges and also extending between the upper margins of the latter said weld metal being above the general level of the sheets and of sufficient mass to appreciably raise the neutral axis of the seam construction.

7. In a car roof, metal roof sheets having upstanding side flanges, inverted channel-shaped seam covers straddling the side flanges of adjacent sheets, and welds of added metal uniting the respective seam covers to the flanges straddled thereby, the metal of a weld being above the general level of the sheets and contacting with the top edges and upper margins of the adjacent flanges and with the portion of the inner surface of the seam cover above said flanges, whereby the weld metal increases the load carrying capacity of the roof.

CHARLES DAVID BONSALL.