

Dec. 29, 1925.

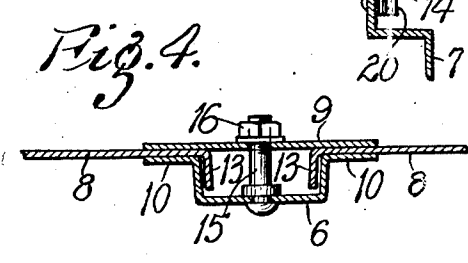
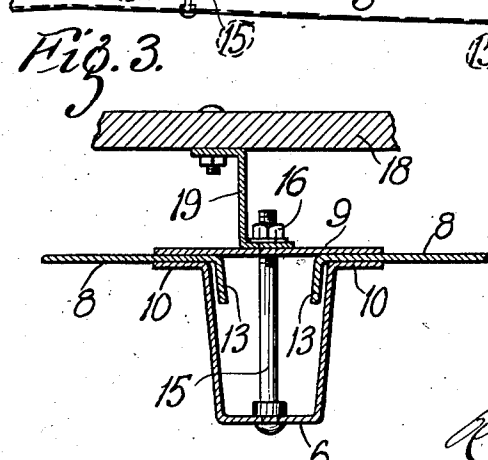
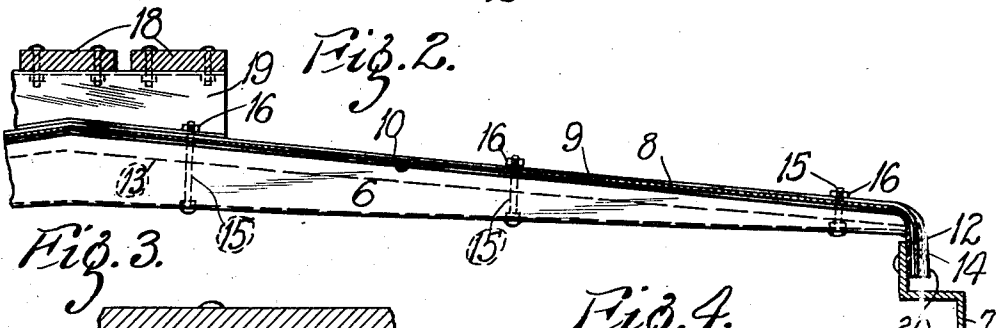
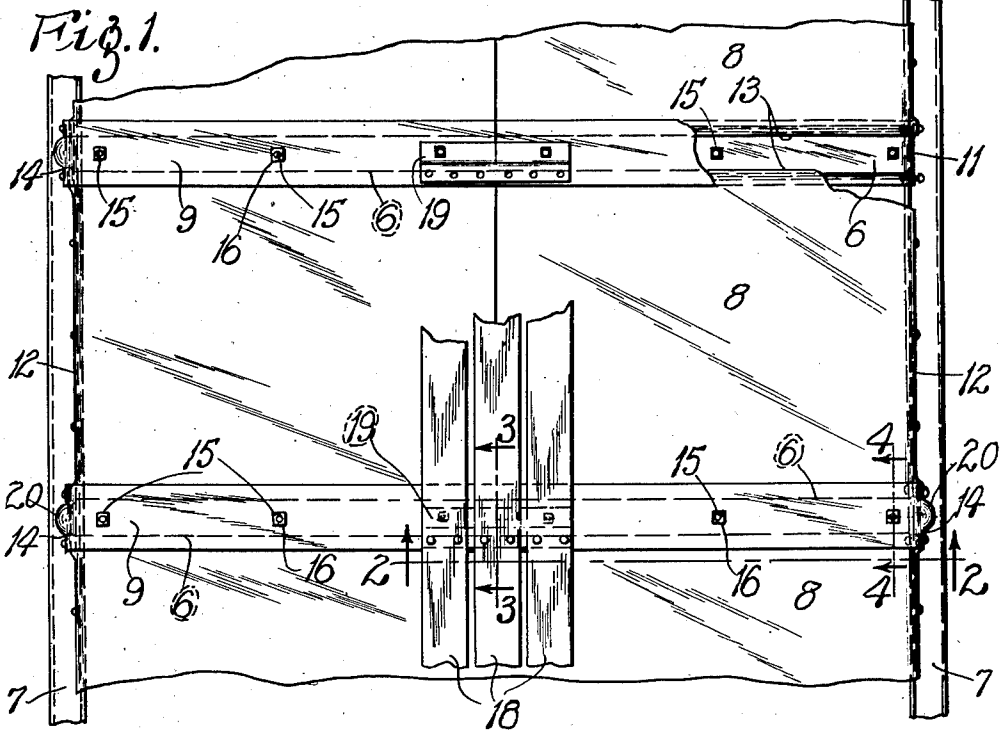
1,567,141

R. D. HAWKINS

CAR ROOF

Filed Oct. 27, 1924

2 Sheets-Sheet 1



INVENTOR:
Robert D. Hawkins,
by [Signature]
his ATTORNEYS

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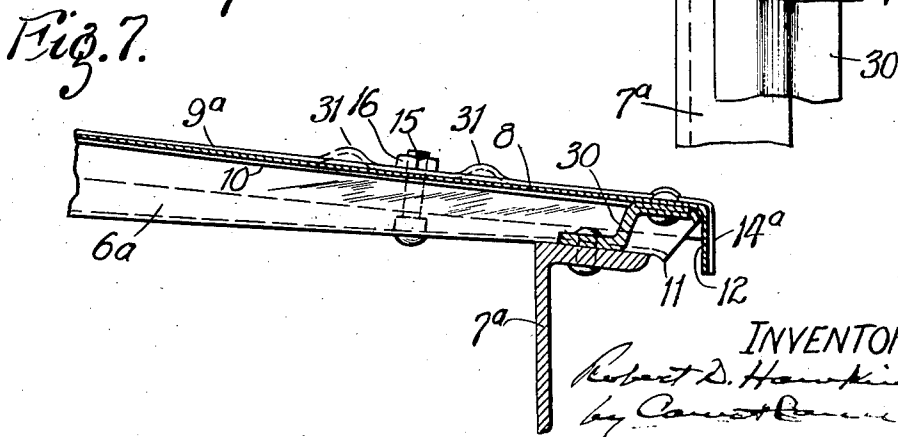
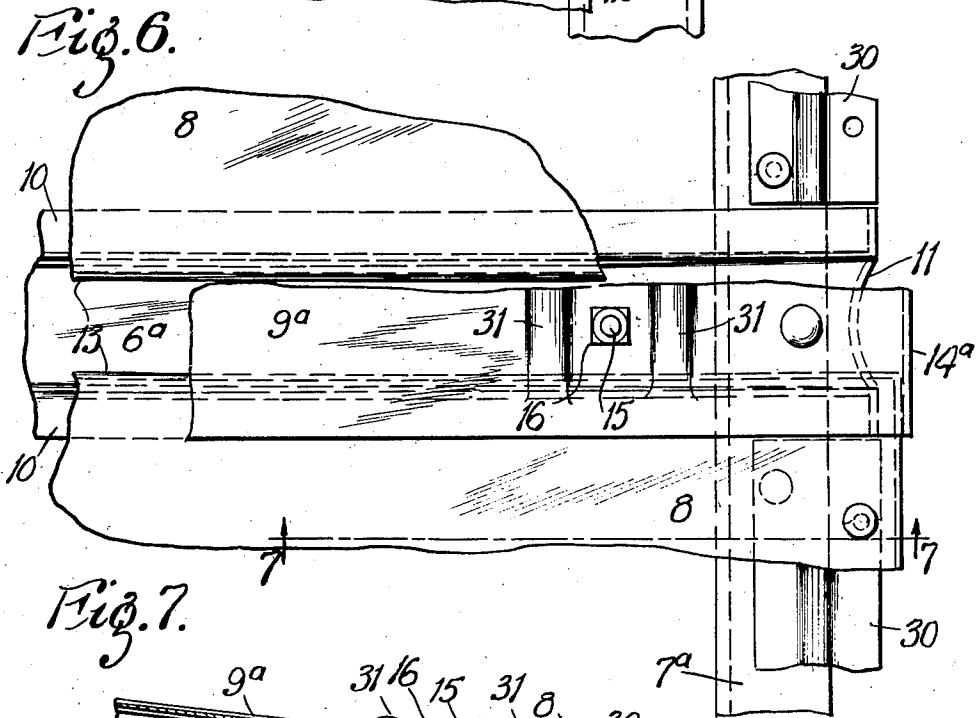
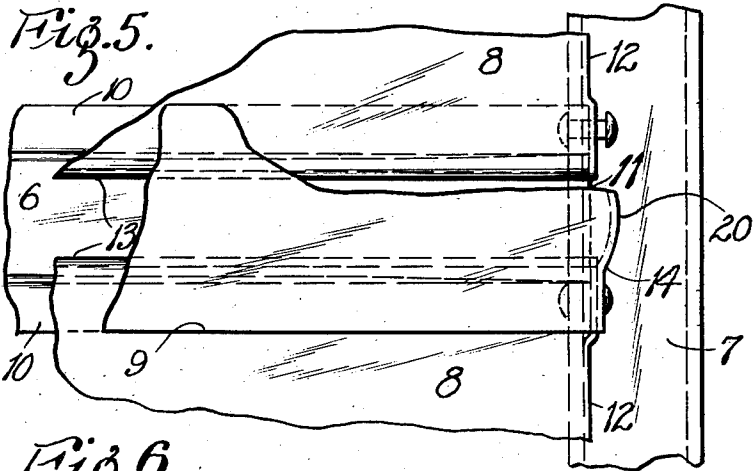
1,567,141

R. D. HAWKINS

CAR ROOF

Filed Oct. 27 1924

2 Sheets-Sheet 2



INVENTOR:
Robert D. Hawkins
by *Carroll*
his ATTORNEYS

UNITED STATES PATENT OFFICE.

ROBERT D. HAWKINS, OF WILMINGTON, NORTH CAROLINA.

CAR ROOF.

Application filed October 27, 1924. Serial No. 746,011.

To all whom it may concern:

Be it known that I, ROBERT D. HAWKINS, a citizen of the United States, and a resident of the city of Wilmington, in the county of New Hanover and State of North Carolina, have invented a certain new and useful Improvement in Car Roofs, of which the following is a specification.

This invention relates to flexible car roofs and has for its principal object to produce a roof of simple and economical construction that is easy of application and that will readily adapt itself to the distortions of the car body incident to service conditions. Another object is to utilize the roof seams or joints as drain channels for draining off any water that may enter said joints. Another object is to secure effective ventilation of said joints and thus prevent sweating or the accumulation of moisture on the surfaces of the parts forming said joints. Other objects are to reduce the weight of the roof, to simplify the construction thereof and to cheapen the cost of manufacture. The invention consists in the improved flexible car roof construction hereinafter shown and described; and it also consists in the combinations and arrangements of parts 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 the car roof embodying my invention,

Fig. 2 is an enlarged vertical transverse section through one-half of the car roof on the line 2—2 in Fig. 1,

Fig. 3 is a vertical cross-section through one of the seams at the ridge, the section being taken on the line 3—3 in Fig. 1,

Fig. 4 is a vertical cross-section through one of the seams adjacent to the eaves, the section being taken through one of the securing bolts for the cap strip on the line 4—4 in Fig. 2,

Fig. 5 is a fragmentary plan view of the eaves portion of the roof in the region of one of the roof joints, parts being shown broken away to more clearly illustrate the invention,

Fig. 6 is a fragmentary plan view of the eaves portion of the roof in the region of one of the roof joints, showing a modified form of eaves construction, and

Fig. 7 is a vertical cross-section taken adjacent to the carline on the line 7—7 in Fig. 6.

As shown in Figs. 1 to 5 of the accompanying drawing, the present roof comprises carlines 6 that extend from side plate 7 to side plate 7 of the car and whose ends are rigidly secured to said side plates; it also comprises metal roof sheets 8 that extend from side plate to side plate and span the spaces bounded by said carlines and side plates and have their ends rigidly secured to the latter; and it also comprises seam cover plates 9 that overlap the side margins of adjacent roof sheets from side plate to side plate and are rigidly secured thereto.

As shown in the drawing, the side plates 7 are of substantially Z-shaped cross-section and have their web portions disposed horizontally and have their inner flanges disposed uppermost and their lower flanges uppermost. The carlines 6 are of substantially channel-shaped section and have lateral flanges 10 at the top of their side walls which project outwardly therefrom and serve as supports for the side marginal portions of the roof sheets. The carlines are deepest at the ridge and gradually decrease in depth towards the eaves where they terminate in end flanges 11 that project below and on opposite sides of the channel; the ends of the channel-shaped body portion of the carline being left open to provide for drainage and ventilation of the channel. The carlines are arranged with their depending end flanges 11 overlapping the outer faces of the upstanding flanges of the side plates; and the webs or bottoms of the channel-shaped body portions of said carlines slope downwardly on opposite sides of the ridge to secure effective drainage of the channel.

The roof sheets 8 are preferably made of thick enough gage to be self-supporting and are provided with depending end or eaves flanges 12 that overlap the outer faces of the upstanding flanges of the side plates and are rigidly secured thereto by rivets. The roof sheets are supported along their side margins on the lateral top flanges 10 of the carlines and have depending side marginal flanges 13 located within channel-shaped body portions of the carlines. The depending side, marginal flanges of adjacent sheets lie in the channel-shaped body

portions of the carlines where ample clearance space is provided to permit the sheets to adapt themselves to the distortions of the car frame.

5 The roof sheets are held down on the lateral top flanges of the carlines by the seam cover plates 9, each of which comprises a flat plate which rests upon the spaced side margins of adjacent sheets and spans the
10 spaces therebetween. The seam cover plates are of a width corresponding to the overall width of the carlines and have depending end flanges 14 that overlap adjacent portions of the depending end flanges
15 of the sheets and carlines and are rigidly secured to the upstanding flanges of the side plates by means of horizontal rivets which extend through the overlapped portions of the end flanges of the cover plates, roof
20 sheets, and carlines.

The seam cover plates are held down on the sheets by a series of upright bolts 15, that are riveted or otherwise permanently
25 secured to the bottom or web portion of the carlines and extend upwardly through openings provided therefor in the seam cover plate and are provided with suitable adjusting and locking nuts 16. By this arrangement the seam covers are firmly held
30 in position and serve to hold the side marginal portions of the sheet down on the lateral flanges of the carlines without being clamped, thereby permitting slight sliding movement of the sheets in response to the
35 distortions of the car frame.

Running boards 18 extend longitudinally of the car at the ridge and are supported on running board saddles 19 of substantially
40 Z-shaped section. The lower or base flanges of the Z-shaped running board saddles 19 rest on the seam cover plates and are secured thereto by means of the bolts 15 located in the carline at points adjacent to the
45 lateral top flanges of the running board saddles and are bolted or otherwise rigidly secured thereto.

The depending end flanges of the seam cover plates are bowed or bulged outwardly, as at 20, opposite the channel portion of the carlines, thereby leaving downwardly
50 opening spaces between the end flanges of said seam cover plates and the ends of the carline, and forming outlets which permit free circulation of air through the hollow seams formed by the carlines and seam
55 cover plates and serve also as drainage openings to permit the discharge of water that may enter said joints.

60 In the modified construction shown in Figs. 6 and 7, the carlines 6^a rest on and are riveted to the outwardly projecting lateral flanges of angle bar side plates 7^a and have downturned lip portions at the ends of
65 their webs and lateral top flanges that over-

hang the outer edges of said side plates. The cap strips 9^a have depending eaves flanges 14^a that overhang the ends of the carlines and thus prevent water or cinders
70 from blowing into the carlines through the openings in the ends thereof. At the eaves, the roof sheets 8 are supported between the carlines 6^a by means of eaves strips 30 of substantially Z-shaped section. One flange
75 of each strip 30 rests on and is riveted to the top flanges of the side plates; and the other flanges projects outwardly beyond the side plates and is riveted to the undersides of the roof sheets. The cap strips 9^a
80 are strengthened in the region of the securing bolts 15 by means of transverse corrugations 31 disposed one on each side of each bolt. These corrugations serve to prevent bending or buckling of the cap strips in the region of the bolts when the bolts are
85 tightened to clamp the roof sheets in position.

It is noted, that by reason of the above described construction, the roof sheets are kept in proper position and that their
90 depending side flanges which project into the channel portions of the carlines prevent undue movement thereof, but that in the case of the distortion of the car frame, the sheets are free to move to the extent necessary to prevent undue stress thereon. It is also
95 noted that all of the securing bolts for the seam cover plates and running board saddles are located within the channel-shaped body portion of the carlines, whereby any water entering the bolt holes will run down
100 said bolts into the carlines and be discharged at the openings in the ends thereof.

Obviously, the hereinbefore described arrangement admits of considerable modification without departing from the invention, and I do not wish to be limited to the precise arrangement shown.

What I claim is:

1. A car roof comprising channel-shaped
110 carlines extending from side plate to side plate and rigidly secured thereto, roof sheets extending from side plate to side plate with their side margins supported on the side walls of adjacent carlines, cap strips
115 extending from side plate to side plate and covering the carlines and the side marginal portions of the sheets supported thereby, and means for securing said caps in position, said means comprising a plurality of upright
120 fastening members removably engaging said cap strips and permanently secured directly to the webs of the carlines.

2. A car roof comprising channel-shaped
125 carlines extending from side plate to side plate and rigidly secured thereto, roof sheets extending from side plate to side plate with their side margins supported on the side walls of adjacent carlines, and cap strips of flat section extending from side plate to side
130

plate and covering the carlines and the marginal portions of the sheets supported thereby, and means permanently secured to said carlines, for detachably securing said caps in position, said cap strips being turned down at the eaves over the ends of the carlines and rigidly secured to said side plates, the downturned eaves end portions of said cap strips being formed with hollow ribs which extend upwardly from the lower edges of said cap strips and merge into the upper surfaces thereof inside the downturned eaves ends thereof.

3. A car roof comprising channel-shaped carlines extending from side plate to side plate and rigidly secured thereto, roof sheets extending from side plate to side plate with their side margins supported on the side walls of adjacent carlines, and cap strips extending from side plate to side plate and covering the carlines and the marginal portions of the sheets supported thereby, and means for securing said caps in position, said means comprising a plurality of upright fastening members permanently secured directly to the webs of the carlines between the side flanges thereof and removably engaging said cap strips, said cap strips having transverse strengthening ribs formed therein on opposite sides of said fastening members.

4. A car roof comprising channel-shaped carlines extending from side plate to side plate and rigidly secured thereto, said carlines having lateral flanges at the tops of their side walls, roof sheets extending from side plate to side plate with their adjacent side marginal portions resting on the lat-

eral flanges of adjacent carlines, said roof sheets having depending flanges at their adjacent sides lying within the carlines, cap strips extending from side plate to side plate and covering the carlines and the marginal portions of the sheets supported thereby, and means for securing said caps in position, said means comprising a plurality of upright bolts having shouldered portions resting on webs of the carlines and portions extending through said webs and riveted directly thereto.

5. A car roof comprising channel-shaped carlines extending from side plate to side plate and rigidly secured thereto, roof sheets extending from side plate to side plate with their side margins supported on the side walls of adjacent carlines, cap strips of flat section extending from side plate to side plate and covering the carlines and the marginal portions of the sheets supported thereby, and means for securing said caps in position, said means comprising a plurality of upright bolts permanently secured directly to the webs of the carlines between the side flanges thereof and removably engaging said cap strips, the roof sheets and cap strips being turned down at the eaves and rigidly secured to the outer faces of the side plates, the downturned eaves portions of the cap strips being formed with outstanding hollow ribs that extend upwardly from the lower edges of said cap strips and merge into the upper surfaces thereof inside the downturned eaves ends thereof.

Signed at Wilmington, North Carolina, this 1st day of October, 1924.

ROBERT D. HAWKINS.