R. C. DUDLEY.

CAR ROOF.

APPLICATION FILED SEPT. 3, 1909.

992,409. **Patented May 16, 1911.**

Fig. 1

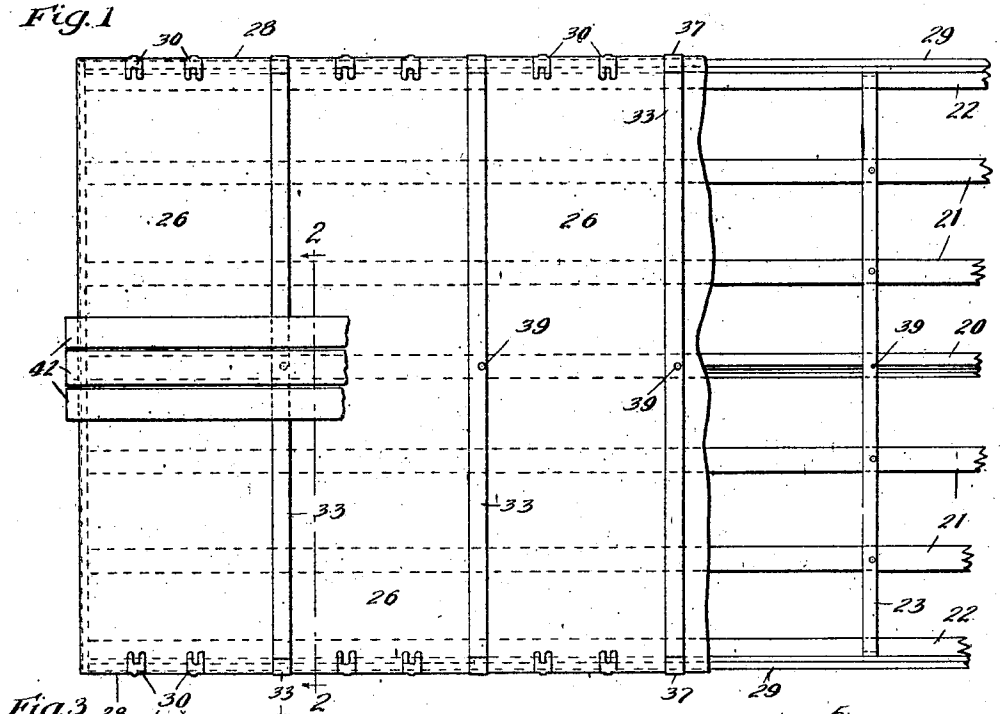


Fig. 3

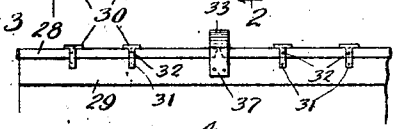


Fig. 2

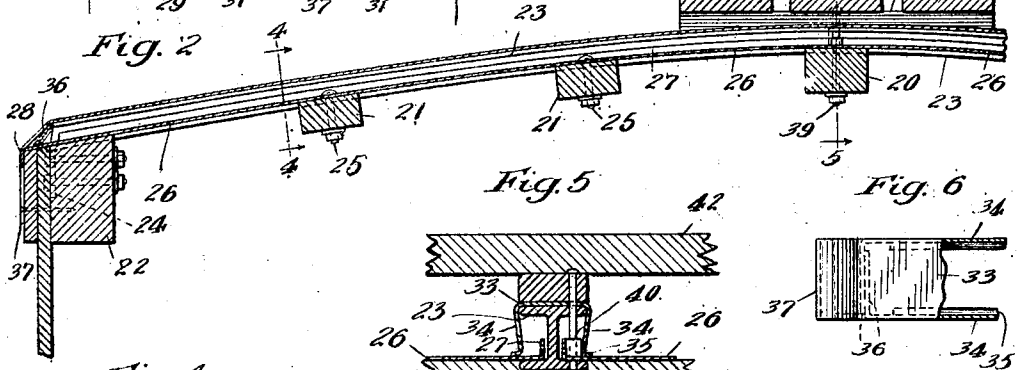


Fig. 5

Fig. 6

Fig. 4

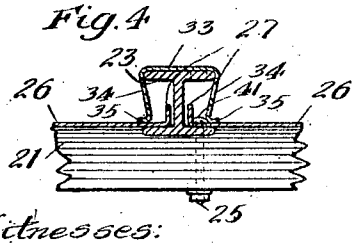
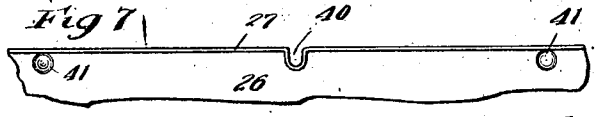


Fig 7



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UNITED STATES PATENT OFFICE.

RAYMOND C. DUDLEY, OF CHICAGO, ILLINOIS.

CAR-ROOF.

992,409. Specification of Letters Patent. Patented May 16, 1911.

Application filed September 3, 1909. Serial No. 516,051.

To all whom it may concern:

Be it known that I, RAYMOND C. DUDLEY, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Car-Roofs, of which the following is a specification.

My invention relates to sheet-metal roofs for freight-cars; and it has for an object the providing of an especially simple, efficient and readily applied all-steel roof, with the several features of improved construction hereinafter described or claimed.

In the accompanying drawings, forming a part of this specification, and in which like reference numerals indicate like parts in all of the figures, Figure 1 is a top plan view of the roof construction; Fig. 2 is a section on the line 2—2 of Fig. 1; Fig. 3 is a detail side view of the construction at one of the eaves; Fig. 4 is a section on the line 4—4 of Fig. 2; Fig. 5 is a section on the line 5—5 of Fig. 2; Fig. 6 is a detail plan view of one end of one of the caps that rest upon the carlines; and Fig. 7 is a detail fragmentary view of a side edge of one of the sheets.

20 is the ridge-beam of the car-roof framework; 21, 21 are the purlins; and 22, 22 are the side-plates.

23, 23 are I-beam steel carlines, of the curvature of an arc of a circle, resting upon the side-plates and purlins and ridge-beam, each of these several longitudinal members being gained out to socket the bottom flanges of said carlines. The carlines have their webs and upper flanges cut away at each end, and the lower flange members 24, 24 are bent downward to fit against and be gained into the outer faces of the side-plates, and are bolted thereto by bolts. The bolts 25 secure the purlins to the bottom flange on one side of the web of each carline. The top flange of the carline has a hole in registry with each purlin-bolt hole in the bottom flange and of larger diameter, to permit the bolts 25 to be inserted from above. The sheet-steel sheets 26 extend across the full width of the roof and have the same curvature as the carlines. The side edges of each sheet rest upon the bottom flanges of the I-beam carlines, and have upturned flanges 27, 27 that rise along the vertical webs of said carlines and are sufficiently spaced therefrom to allow the sheet some lateral play between the opposed carlines that support it. The ends of the sheets rest upon the side-plates of the roof and have downwardly bent flanges 28, 28 that are secured to the fascia 29 by the clips 30, 30, each clip being fastened by a bolt 31 and spike 32, the latter passing through the aforesaid flange 28 of the sheet. A sheet-metal cap member 33 covers and rests upon the entire length of the top flanging of each carline, conforming to the curvature thereof. Said caps have downwardly extending lateral flanges 34, 34, with outwardly turned lower edges 35, 35 that rest upon the sheets 26, somewhat within their flanges 27, and serve to hold said sheets in place and exclude water from entering between the sheet-edges and the webs of the carlines. The said flanges 34, 34 of each cap are bent slightly inward toward each other, so that the cap may more firmly grip the carline and exert some spring pressure upon the sheets 26 that said flanges 34 engage. At either end of each cap, the said lateral flanges 34 are cut free of the top of the cap, and the said free tips, 36, 36 are bent inward and folded over each other, so as to cover the end of the web and top flanging of the inclosed carline, and the end 37 of the top of the cap is bent down over said inwardly folded flange-tips 36 and brought down over and spiked to the fascia of the roof, thus securing the cap at each end and making a water-tight closure over the end of the inclosed carline. The wooden saddle 38 surmounts the apex of each capped carline, and the thus superposed saddle and cap and carline are secured to the ridge-beam of the roof by the through center-bolt 39, passing through the saddle and the cap and the top and bottom flanges on one side of the web of the carline. The flanged edge of each sheet 26 has a recess 40 formed in it, to clear the center-bolt 39 without requiring the sheet to be perforated by a bolt-hole that would offer an opportunity for leakage. To permit the sheet-edges to lie as

closely as possible upon the bottom flanges of the carlines, slight bosses 41, 41 may also be struck up in the edge of the sheet to freely accommodate the rounded heads of the purlin bolts 25. The running-boards 42 are of course spiked upon the top of the saddles.

In making repairs, the depending flanges at one end of a sheet may be bent up and the sheet withdrawn without removing the carlines, its lateral edges sliding in the retaining channels of the carlines. And in like manner the roof may originally be applied by first securing the carlines in place and then sliding the sheets into the opposed channels, one end of the sheet being left unbent, or only partly bent or creased, until after the sheet has been so slid into position on the roof.

The curvature of the carlines gives extreme rigidity to the roof frame, and permits the sheets great freedom in shifting and yielding as the car weaves under the strains it is subjected to in service, and also facilitates the above mentioned sliding insertion or withdrawal of the sheets in either applying or making repairs on the roof. The I-beam form of the carline greatly stiffens it and affords a firm support for the cap that straddles it, and also permits the effective application of the single through bolt that binds the saddle and cap and carline upon the ridge-beam.

My invention is hereinabove set forth as embodied in a particular form of construction, but I do not limit it to such particular form or to less than all the possible constructions in which the subject-matter of the herein-following claims may be embodied and distinguished from prior devices for like purposes.

I claim:—

1. In a metallic car-roof, in combination: a series of steel carlines, each having a single vertical web and bottom flanges projecting on either side of said web; laterally and upwardly flanged metallic sheets resting upon said bottom flanges of the adjacent opposed carlines and secured to the sides of the car; laterally and downwardly flanged metallic caps straddling and resting upon the carlines and covering and inclosing the aforesaid flanged edges of the sheets; saddles surmounting said caps and carlines; and securing means binding said saddles and caps and carlines to the ridge; substantially as specified.

2. In a metallic car-roof, in combination: a series of I-beam steel carlines, having their webs vertical; laterally and upwardly flanged metallic sheets resting upon the bottom flanges of the adjacent opposed carlines and secured to the sides of the car; laterally and downwardly flanged metallic caps straddling and resting upon the carlines and covering and inclosing the aforesaid flanged edges of the sheets; saddles surmounting said caps and carlines; and securing means binding said saddles and caps and carlines to the ridge; substantially as specified.

3. In a metallic car-roof, in combination: a series of steel carlines, each having a single vertical web and bottom flanges projecting on either side of said web; laterally and upwardly flanged metallic sheets resting upon said bottom flanges of the adjacent opposed carlines and secured to the sides of the car; laterally and downwardly flanged metallic caps straddling and resting upon the carlines and covering and inclosing the aforesaid flanged edges of the sheets; saddles surmounting said caps and carlines; and a through bolt binding said saddles and caps and carlines to the ridge; substantially as specified.

4. In a metallic car-roof, in combination: a series of steel carlines, each having a single vertical web and bottom flanges projecting on either side of said web; laterally and upwardly flanged metallic sheets, each extending from side to side of the car and resting upon said bottom flanges of the adjacent opposed carlines and secured to the sides of the car; laterally and downwardly flanged metallic caps straddling and resting upon the carlines and covering and inclosing the aforesaid flanged edges of the sheets; saddles surmounting said caps and carlines; and securing means binding said saddles and caps and carlines to the ridge; substantially as specified.

5. In a metallic car-roof, in combination: a series of steel carlines, each having a single vertical web and bottom flanges projecting on either side of said web; laterally and upwardly flanged metallic sheets, each extending from side to side of the car and resting upon said bottom flanges of the adjacent opposed carlines and secured to the sides of the car; laterally and downwardly flanged metallic caps straddling and resting upon the carlines and covering and inclosing the aforesaid flanged edges of the sheets; saddles surmounting said caps and carlines; and a through bolt binding said saddles and caps and carlines to the ridge; the flanged edge of each sheet being recessed to clear said bolt; substantially as specified.

6. In a metallic car-roof, in combination: a series of I-beam steel carlines, having their webs vertical; laterally and upwardly flanged metallic sheets resting upon the bottom flanges of the adjacent opposed carlines and secured to the sides of the car; laterally and downwardly flanged metallic caps strad-

dling and resting upon the carlines and covering and inclosing the aforesaid flanged edges of the sheets, the lateral flanges of said caps being sprung inward toward the web of the carline; saddles surmounting said caps and carlines; and securing means binding said saddles and caps and carlines to the ridge; substantially as specified.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

RAYMOND C. DUDLEY.

Witnesses:
HENRY LOVE CLARKE,
H. M. MUNDAY.