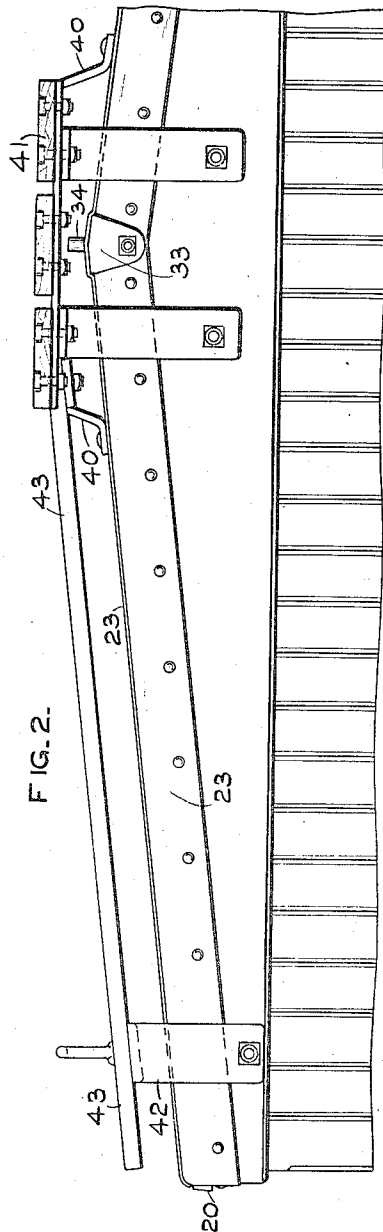
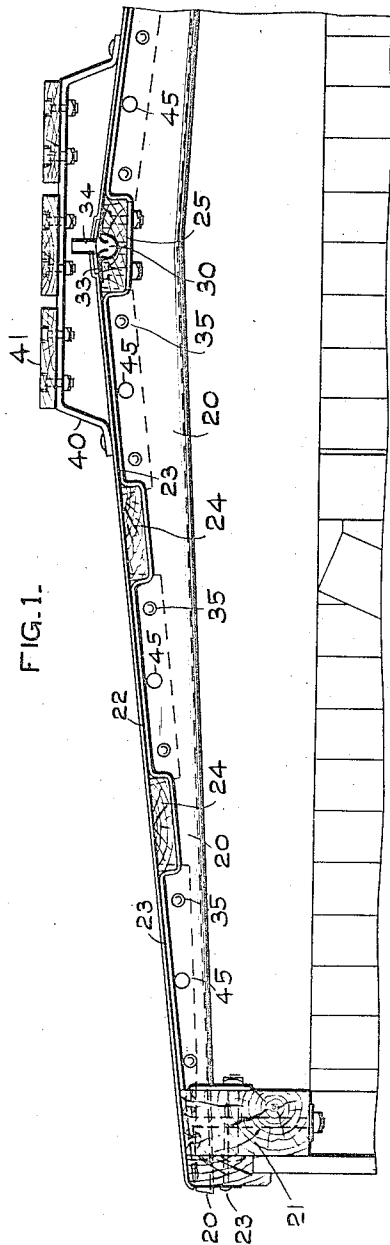


J. L. MOHUN.
FLEXIBLE METALLIC CAR ROOF.
APPLICATION FILED OCT. 19, 1910.

1,069,562.

Patented Aug. 5, 1913.

3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2.

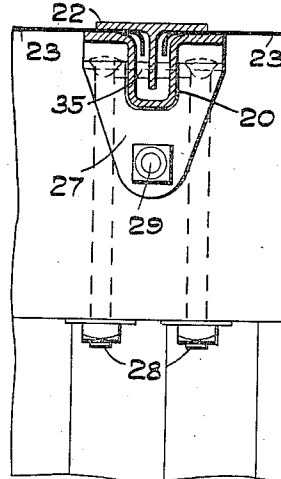
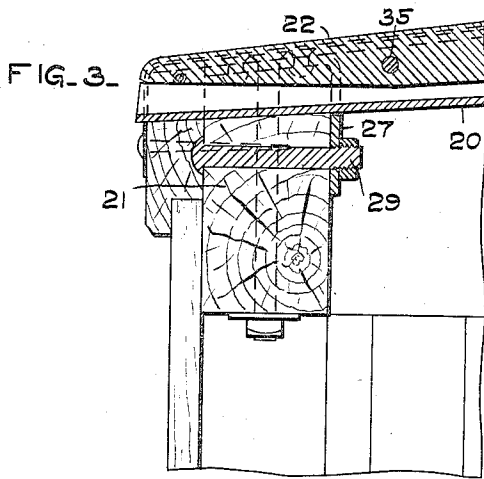


FIG. 5.

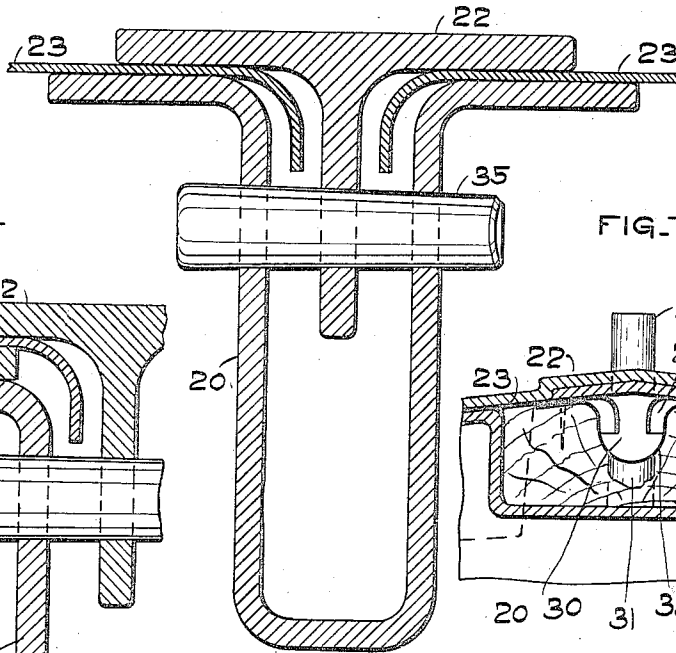


FIG. 6.

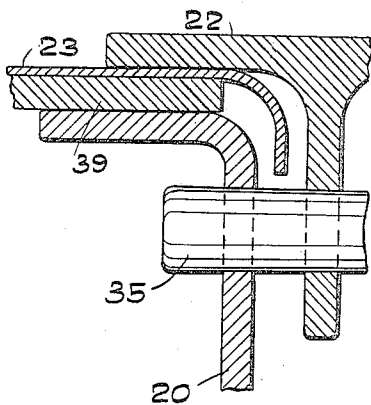
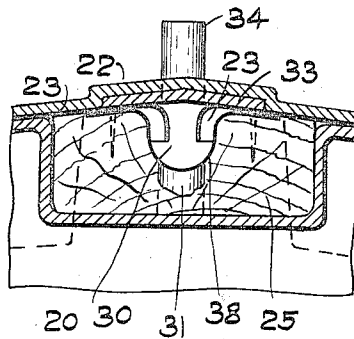


FIG. 7.



WITNESSES

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3 SHEETS-SHEET 3.

FIG. 8 -

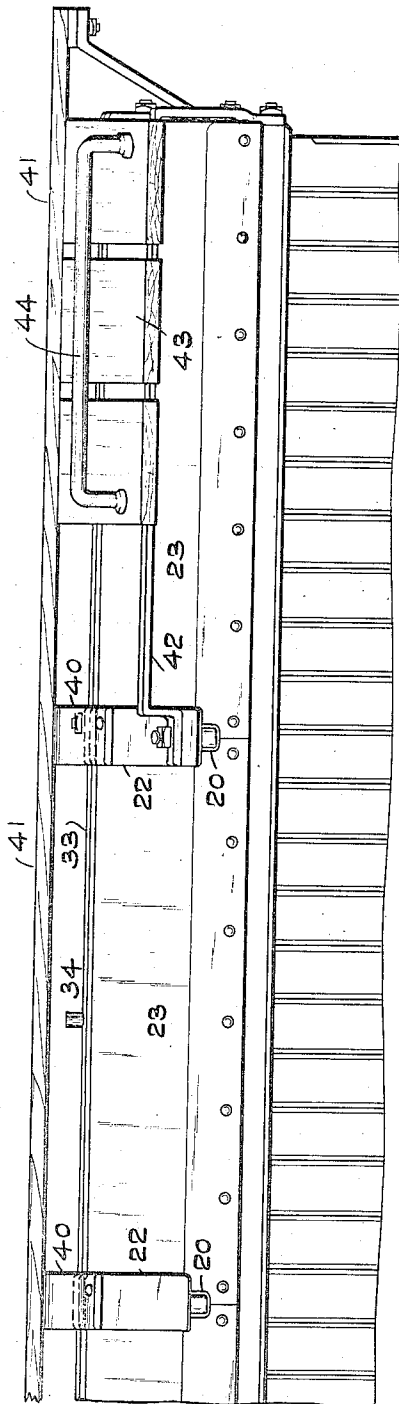


FIG. 15 -

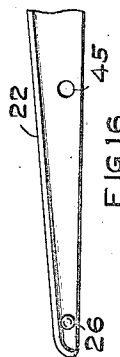


FIG. 16 -

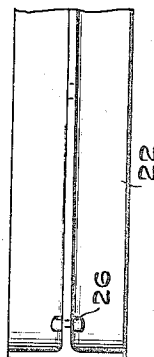


FIG. 17 -

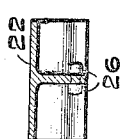


FIG. 12 -

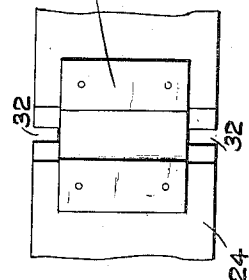


FIG. 13 -

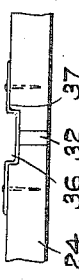


FIG. 14 -



FIG. 9 -

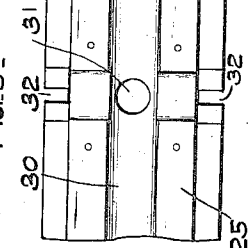


FIG. 10 -

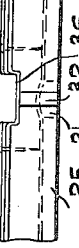
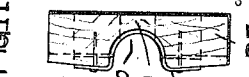


FIG. 11



WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN L. MOHUN, OF BROOKLYN, NEW YORK.

FLEXIBLE METALLIC CAR-ROOF.

1,069,562.

Specification of Letters Patent.

Patented Aug. 5, 1913.

Application filed October 19, 1910. Serial No. 587,803.

To all whom it may concern:

Be it known that I, JOHN L. MOHUN, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Flexible Metallic Car-Roofs, of which the following is a specification.

This invention relates to metal roofs for cars, and has for one of its objects, to provide improved metal carlines, such as pressed steel, each composed of two members rigidly secured together, with metal roof sheets supported between them, but so arranged that both members forming the carline carry the weight of the roof, and no weight is carried by the roof sheets, the running boards, brackets, etc., being supported directly upon the carlines.

Another object is to provide the ridge pole of the roof with a gutter or groove extending longitudinally, for draining off any water that may collect therein.

Another object is to provide the metal roof sheets with edges, loosely supported at the ridge pole and also along the carlines whereby a relative sliding movement may occur at these points, and greatly increase the flexibility of the roof.

Another object is to provide an improved drainage system in which any water that enters over the edges of the roof sheets may drain off through channels in the carlines.

Another object is to provide an improved ventilating means for permitting a circulation of air both from the interior of the car and through the channels in the carlines.

Another object is to provide improved means for supporting the running board extensions at the ends of the car.

Still another object is to provide an improved rain proof roof structure, which may be built up of standard shapes and sections in all its parts, and connected up in a cheap and simple manner, thereby avoiding all necessity of using costly special parts and expensive skilled labor in its construction.

These and other objects of my invention will hereinafter more fully appear from the following description and claims.

In the accompanying drawings: Figure 1 is a transverse sectional view of a portion of a car roof embodying certain features of my improvements; Fig. 2, an end view of a portion of the car and showing the running board and its extension; Fig. 3, a transverse

sectional view of a portion of the car roof showing a preferred construction for fastening the ends of the carlines to the side plates of the car; Fig. 4, a view at right angles to Fig. 3, the carline being indicated in transverse section; Fig. 5, a transverse section, upon a larger scale, of one form of my improved two-part metal carline, also showing the edges of the metal roof sheets supported between said parts; Fig. 6, a similar sectional view illustrating a slight modification in which the roof sheet is provided with a lining; Fig. 7, a detail transverse section of the ridge pole and connections, taken through the flanges of a carline; Fig. 8, a side elevation of a portion of a car roof embodying my improvements; Fig. 9, a detail plan of a portion of the car ridge pole at a carline connection point; Fig. 10, a side view of the same; Fig. 11, a transverse section of the ridge pole; Fig. 12, a plan of a portion of a purlin at a point where same is connected with a carline; Fig. 13, a side view of same; Fig. 14, a transverse section of a purlin; and, Figs. 15, 16, and 17, a side view, inverted plan, and transverse section, respectively, of the end portion of the cap member of a two-part carline.

According to the construction shown in the drawings, my improved metal carlines are formed of two members; a main or lower member, 20, preferably constituted of pressed metal such as steel, and containing a channel for draining off water or moisture and discharging at the side of the car, and an upper or cap member, 22.

The main or body portion of the carline is preferably formed of a trough or U shaped section, as shown, the trough comprising the channel extending to the side of the car, and discharging over the side plate, 21, which may, if desired, be notched to receive the body portion of the carline.

The upper or cap member, 22, of the carline may be of any shape or section, but I prefer to form the same of a standard T section, the web of which extends down centrally into the trough between the walls of the U shaped body portion, 20, and is rigidly connected thereto by means of dowel pins, 35, preferably split and tapered so that the weight of the roof is carried by both members comprising the two-part carlines. When the two members are thus secured together there is a sufficient clearance between them to receive the edges of the metal

roof sheets, 23, which are loosely supported, so that there may be a sliding movement between said sheets and the members of the carline. The top flange of the cap section, 22, of the carline, covers the trough or channel in the body portion, 20, and the side edges of the metal roof sheets, 23, extend over said channels and are preferably turned downward so that any water which enters under the cap section may readily drain into and through said channel and be discharged over the side plates of the car.

The body portion of the carline, 20, is preferably formed with notches or recesses for receiving the purlins, 24, and the ridge pole, 25, while the vertical web of the carline cap, 22, is notched or partially cut away at these points to allow the top flange to fit down closely and pass over the ridge and purlins. In order to secure the parts of the roof together at these points, the purlins and ridge pole may be provided with slots, 32, in their sides, to receive the edges of the vertical webs of the carline cap, whereby the framework or the supporting members of the roof, are, in a simple manner, keyed together without the use of nails, bolts, or other fastening means in the purlins, and a strong but flexible roof structure is obtained. This method of connecting the carlines and purlins also serves to center the cap member with reference to the main or body portion of the carline. Other means may be employed for holding the cap member in a central position, such as the spacing pieces, 26, which may be riveted upon opposite sides of the web of the cap member of the carline, as shown in Figs. 15, 16, 17. The web may be partially cut away or tapered down at the ends of the carlines, as shown in Fig. 3.

At the car ridge, the edges of the roof sheets, 23, are supported upon the ridge pole, 25, which is provided with a groove or gutter, 30, extending longitudinally and communicating through an opening, 31, with the channel in the body of the carline, the roof sheets being preferably turned down at the edge, as shown, so as to drain into the ridge gutter and then out through the carlines.

The gutter is covered by the ridge cap, 33, which may be formed in sections extending between the carlines, and having vent openings spaced at any desired interval, the top flange of the carline cap, 22, passing over the ridge cap and holding the same securely in place, as shown more fully in Fig. 7. Both the ridge pole and the purlins are preferably provided with shallow transverse recesses, 36, in their upper faces, at the points where the top plate of the carline cap passes, and the down turned edges of the roof plates or sheets may be partially cut away or notched out to clear the purlins and ridge pole. Metallic lining pieces, 37, may

also be placed upon the purlins at these points, if desired, and the metal lining, 38, of the gutter, 30, may be provided with flanges extending over the top face of the ridge pole to form bearings for the edges of the roof sheets.

At the eaves and ends of the car, the metal roof sheets are turned over and secured by means of nails to the side and end plates, but the other edges of said sheets, along the carlines and at the ridge, are free to slide upon their supports. This gives a very flexible construction and provides for expansion and contraction of the roof and also for the so-called weaving motion of the car.

As a means for fastening the carline body to the side plates of the car, I have shown a bracket, 27, which may be of cast or pressed steel, and of such shape as to surround the U shaped carline member and having flanges adapted to be riveted to the flanges of said carline, the bracket being secured upon the inner face of the side plate, 21, by means of vertical bolts, 28, and a horizontal bolt, 29, see Figs. 3 and 4.

If preferred, the metal roof sheets, 23, may be provided with lining sheets, 39, of any suitable insulating material, as indicated in Fig. 6.

The running board saddles or brackets, 40, are preferably supported directly upon the carlines, and may be fastened by any convenient means, as by rivets or bolts, directly to the carline cap, 22, as shown. The running board, 41, may then be conveniently bolted to said saddles, 40, and all the weight is carried directly by the carlines.

At each end of the car, the running board is provided with a transverse extension, 43, running down to the eaves of the car, and for supporting the lower end of this extension, I provide a bracket member, 42, which may be secured or supported at one end upon the end plate of the car, but having its other end extending to, and secured to, the cap of the first carline, so that the entire weight is carried by the carline and end plates and not by the roof sheets. The usual hand hold, 44, may be mounted upon the running board extension.

Ventilating openings, 45, may be formed through the walls of the U shaped body of the carline, 20, to permit a free circulation of air from the interior of the car through the channels in the carlines, and, as these are open to the outer atmosphere at the eaves of the car and also through openings, 31, into the ridge gutter, 30, and out through vent openings, 34, a thorough ventilation system is provided so that the so-called "sweating" or collection of moisture upon the interior surfaces of the carlines and roof sheets is prevented, and the accumulation of rust thereby avoided.

It will now be seen that my improved

roof construction is simple, but durable, strong, and flexible; that it can be readily constructed of the usual standard sections and parts, without requiring skilled or expensive labor; that it provides a complete system of drainage and ventilation; and that the weight of the running board and its extensions, with all brackets and other outside parts, is carried upon the carlines.

10 Having now described my invention, what I claim and desire to secure by Letters Patent is:

1. In a car roof, the combination of a metal carline composed of a lower U shaped section having a drain channel, and a cap member of a T section covering said channel and having its web extending down into the channel of the lower member and rigidly secured to the side walls thereof, leaving a clear space for drainage at the bottom of said channel, and metal roofing sheets having their edges slidably supported on the lower carline member and beneath the flange of the cap member, and adapted to drain into said channel.

2. In a car roof, the combination of a metal carline composed of a lower U shaped section having a drain channel, and a cap member of a T section covering said channel and having its web extending down into the channel of the lower member and rigidly secured to the side walls thereof, leaving a clear space for drainage at the bottom of said channel, with a clearance space between the top of the lower section and the flanges of the T shaped cap member, and metal roofing sheets having their edges slidably supported in said clearance space and turned down to drain into said channel.

3. In a car roof, the combination of a metal carline composed of a lower U shaped section having laterally extending flanges, and a cap member of a T section having its web extending down into the trough of the lower member and rigidly secured to the side walls thereof, leaving a clear space for drainage at the bottom of said channel, and metal roofing sheets having their edges slidably supported between the lateral flanges of the two members and turned down to drain into the trough of the lower member.

4. In a car roof, the combination of a metal carline formed of a U shaped section having a drain channel and a carline cap covering said channel, a ridge pole supported on said carline and having a gutter discharging into said channel, a ridge cap

covering said gutter, and metal roof sheets having edges supported between the carline and its cap and upon the ridge pole beneath the ridge cap, said edges being turned over to drain into the ridge gutter and drain channel of the carlines.

5. In a car roof, the combination of a metal carline composed of two members, a body portion of U shaped section, and a cap member of a T shaped section having its web extending down into the trough of the body portion and rigidly secured thereto, with a definite clearance between the same, metal roof sheets having their edges slidably supported between said members, and a running board saddle rigidly secured to the cap member, whereby the weight of the running board is supported independently of the roof sheets.

6. In a car roof, the combination of a metal carline composed of two members, a body portion of U shaped section, and a cap member of T shaped section having its web extending down into the trough of the body portion and rigidly secured thereto with a definite clearance between the same, metal roof sheets having their edges slidably supported between said members, a running board having a lateral extension, and a bracket secured at one end to said cap member for carrying said extension.

7. In a car roof, the combination of a metal carline composed of two members, a purlin extending between said members and having a slot or opening for receiving a portion of the carline, and means for rigidly securing said members of the carline together.

8. In a car roof, the combination of a metal carline composed of two members, one having a web portion, a purlin extending between said members and having a slot for receiving the web, and means for securing said members together.

9. In a car roof, the combination of a metal carline composed of two members, one of said members having a projection, and a ridge pole supported on the carline and having a slot for receiving said projection, whereby the structure is keyed together.

In testimony whereof I have hereunto set my hand.

JOHN L. MOHUN.

Witnesses:

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A. S. FOWLER.