H. A. CHRISTY.

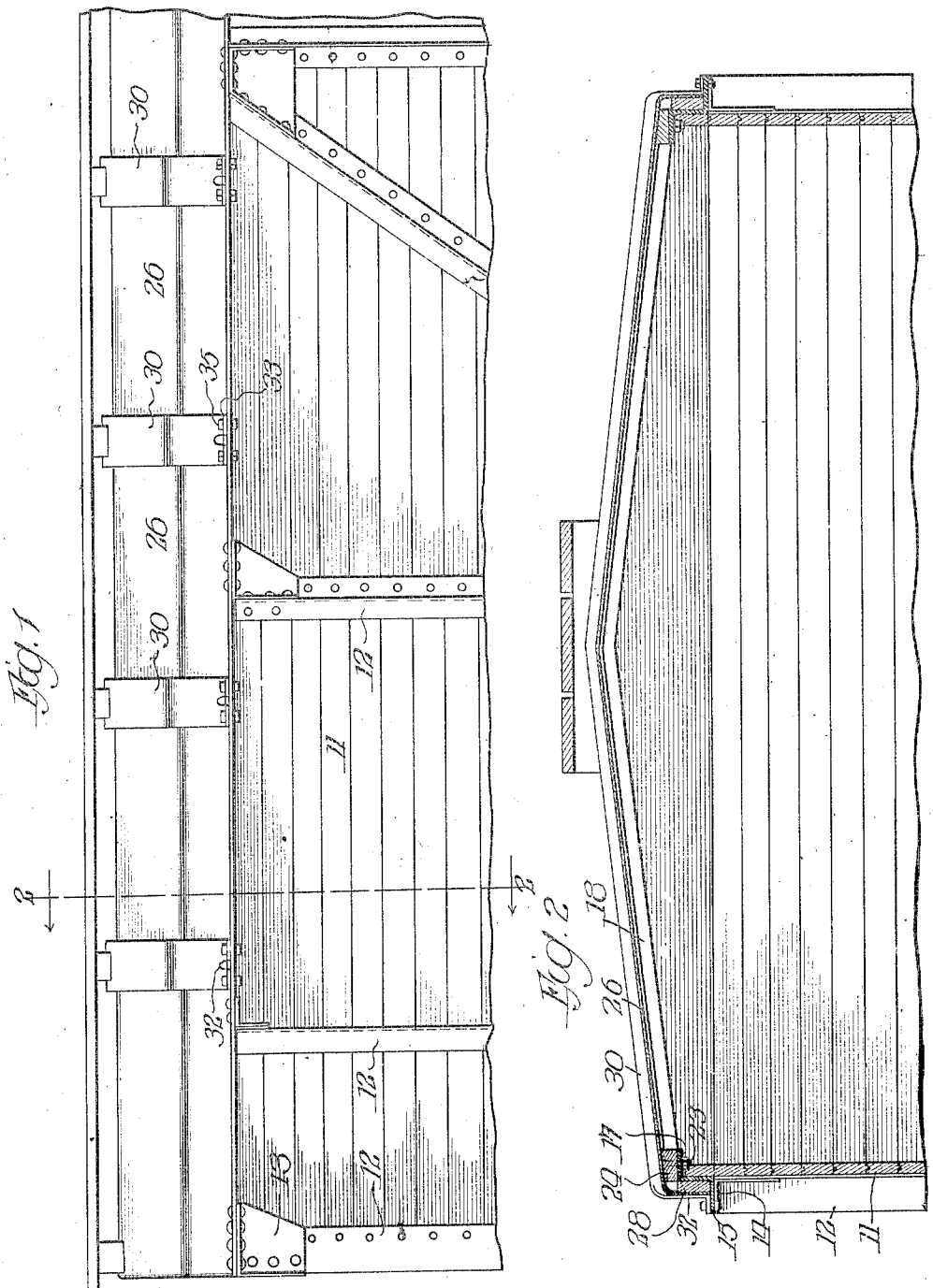
CAR ROOF.

APPLICATION FILED JAN. 22, 1913.

1,068,321.

Patented July 22, 1913.

2 SHEETS—SHEET 1.



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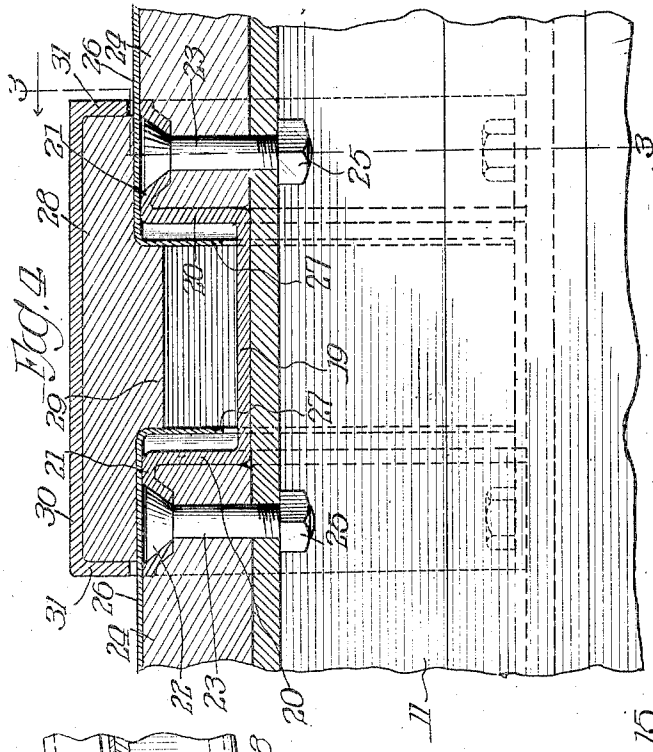

Fig. 4

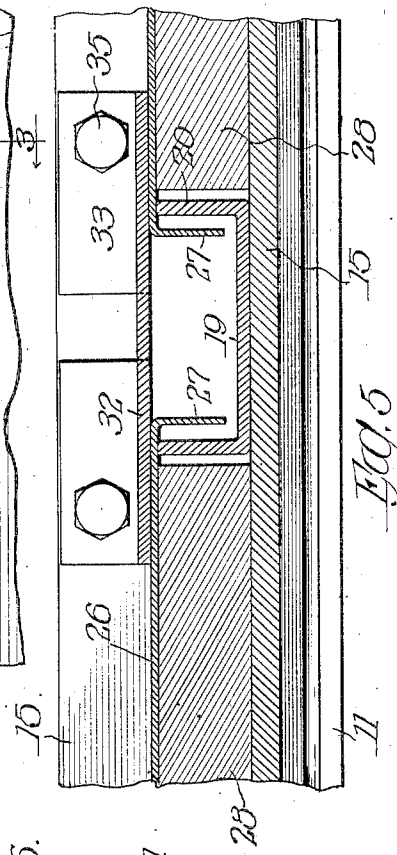

Fig. 5

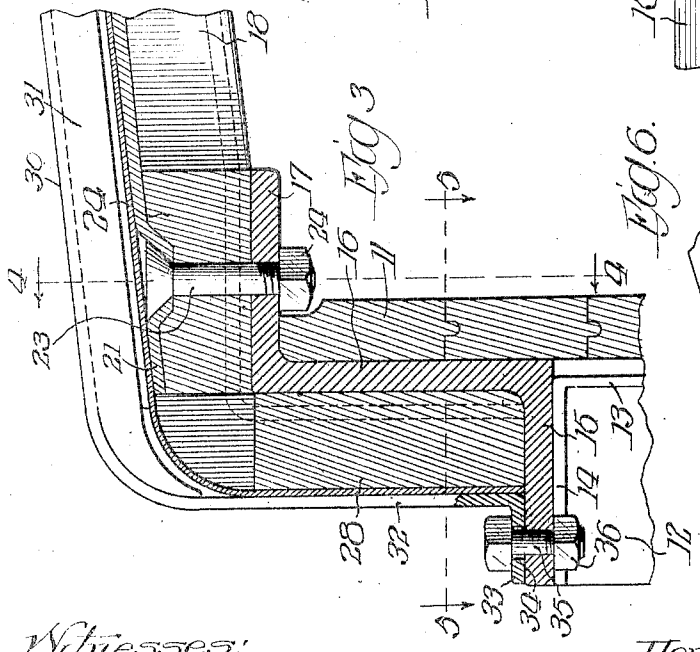

Fig. 3

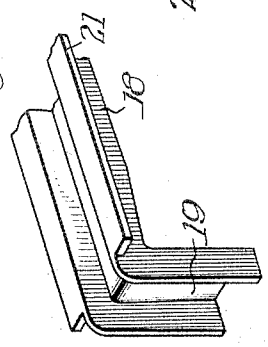

Fig. 6.

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UNITED STATES PATENT OFFICE.

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CAR-ROOF.

1,068,321. Specification of Letters Patent. Patented July 22, 1913.

Application filed January 22, 1913. Serial No. 743,489.

To all whom it may concern:

Be it known that I, HENRY A. CHRISTY, a citizen of the United States, residing at Kenilworth, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Car-Roofs, of which the following is a specification.

This invention relates to railway cars and particularly to the construction and assembling of the roof and side walls.

The invention has for its object the provision of an efficient structure providing for a weather-proof roof which has no through apertures for the admission of moisture and in which the carlines and roof plates are securely supported and anchored together and to the side walls in such manner as to provide for sufficient play to accommodate the vibrations incident to use and yet to guard against the admission of the elements to the car interior.

In order that the invention may be readily understood in its application to car construction generally, I have shown and described the same herein as applied to that type of car in which the side framing is arranged exterior to the sheathing. As, however, the invention is obviously applicable to other types of cars with such slight modifications as will be readily suggested to car builders, the drawings and description are to be taken in an illustrative sense and not as necessarily limiting the invention.

In the drawings: Figure 1 is a partial side elevation of the upper end portion of a car embodying the invention; Fig. 2 is a transverse section on the line 2—2 of Fig. 1; Fig. 3 is a fragmentary transverse vertical section on the line 3—3 of Fig. 4. Fig. 4 is a fragmentary longitudinal vertical section on the line 4—4 of Fig. 3; Fig. 5 is a sectional plan view on the line 5—5 of Fig. 3; and Fig. 6 is a fragmentary detail in perspective showing the end portion of a carline.

In the drawings the side walls of the car are shown as comprising the sheathing 11, supported by and suitably secured to the side posts 12 constituting the side framing. As shown the sheathing is arranged upon the inside of the framing so as to present an unbroken interior. The side posts are of a height less than the interior height of the car and are provided at their upper ends with the brackets 13 having horizontally extending flanges 14. Upon the upper ends of the side posts is supported upon each side of the car a longitudinally extending Z-bar which comprises a lower horizontal outwardly projecting flange 15, a vertical web 16, and an inwardly projecting horizontal flange 17. The inner face of the web 16 is substantially flush with the interior faces of the side posts 12 and forms substantially an upward continuation thereof to support the upper courses of the sheathing 11. The upper flange 17 of the Z-bar overlies the uppermost sheathing strip and serves to support the end of the carlines 18. Each of the carlines extends continuously from wall to wall of the car and is bent in its medial portion to give the proper slope to the car roof. The carline is trough-shape comprising a bottom portion 19, side walls 20, 20, and laterally extending flanges 21, 21, the flanges 21 being perforated and countersunk at intervals to accommodate the conical head 22 of a bolt 23. Arranged upon and supported by the horizontal flange 17 of the Z-bar is a side plate composed of sections 24, 24, arranged in longitudinal alinement and having their adjacent ends separated to accommodate carlines therebetween, the upper faces of the plate sections being recessed to receive the carline flanges 21 and provided with apertures for the accommodation of the shanks of the bolts 23. The Z-bar flange 17 is likewise provided with apertures registering with those of the side plate to receive the lower ends of the bolts 23, the nuts 25 being employed to clamp by means of the bolts the carlines and the Z-bar flange upon the interposed side plate sections whereby the carlines are held in rigid relation to the Z-bars.

The flanges 21 of the carlines are preferably cut away at a point above the outer face of the web 16 of the Z-bar and the bottom and side walls of the carline are bent downward along the outer face of the web, the extreme ends of the bottom and side walls abutting against the upper face of the

lower flange 15 of the Z-bar as shown in Fig. 3.

Roof plates 26 overlie each of the adjacent walls of a pair of carlines and the adjacent edges of said plates are downwardly turned to provide flanges 27 which depend within the trough of the carlines above the bottom thereof, as illustrated in Fig. 4. At their lower ends the roof plates including the flanges are downwardly bent in contact with the depending ends of the carlines and terminate in contact with the upper face of the lower flange 15 of the Z-bar.

Filler strips 28 of wood or the like and of a modified T-cross section overlie the adjacent edges of the roof plates with the stem portion 29 occupying a position between the flanges 27. Overlying the filler strips 28 are cap strips 30 having downwardly depending flanges 31, 31 which take over the edges of the filler strips. The flanges 31 of the cap strips are cut away in a curved line as indicated in Fig. 3, and the web portion 30 thereof is continued, being bent downwardly as shown at 32, in contact with the outer face of the roof plates until the upper face of the lower flange 15 is reached and the cap strip is then bent outwardly parallel to the flange 15 to form the lip 33 which is provided at intervals with perforations 34 registering with the perforations in the flange 15 of the Z-bar. A bolt 35 fits loosely within the perforation 34 and snugly within the perforation of the Z-bar, the nut 36 serving to draw the parts securely together while the loose fit of the bolt within the lip 33 permits a slight play sufficient to take care of the vibrations of the roof plates in use. It is to be noted in this connection also that the flanges 27 of the roof plates are spaced from the side walls 20 of the carline sufficiently to allow of freedom of vibration.

The clamping of the cap strips upon the filler strips 28 which rest upon the roof plates serves to prevent the penetration of moisture thereunder to the carlines, although if by any chance moisture finds its way in the carlines it is conducted thereby over the upper flange of the Z-bar and runs down the bent end of the carline behind the overlying cap strip portion. The fit of the dependent portion of the roof plates and cap strip upon the upper face of the flange 15 is sufficiently loose to permit any inconsiderable amount of moisture as will find its way into the carline to escape therefrom but as an additional provision of escape the lip 33 of the cap-plate may be slotted as indicated at 37 in Fig. 5, this slot may also, if desired, extend slightly above the lip into the web portion 32.

It will be observed that the invention provides a roof the plates of which are imperforate and which are nevertheless firmly secured in position in such manner as to allow of limited vibration without displacement; that the trough-like carlines are covered not only above but also in their dependent portions, being boxed in to protect them from the weather and to serve as a closed drainage conduit for any moisture which may find its way into the same; and that the invention provides for an exceedingly efficient, compact and sightly assemblage of the roof members and the wall members, overcoming in a satisfactory manner the difficulties attendant upon the employment of interior sheathing and exterior framing. Many other advantages due to the construction set forth and not specifically referred to herein will be apparent to those skilled in this art.

I claim:

1. In a car, the combination of a side wall comprising side posts and sheathing, a longitudinally extending bar having a lower horizontal flange resting upon the upper ends of the posts and an upper horizontal flange, carlines resting upon the upper flange with their ends downturned against the upper face of the lower flange, roof plates resting upon the carlines and having their ends downturned over the depending ends of the carlines, cap strips overlying the carlines and adjacent ends of the roof plates and having their ends downturned to the upper face of the lower flange of the bar, means to secure the carlines to the upper flange of the bar, and means to secure the cap strips to the lower flange of the bar, substantially as described.

2. In a car, the combination of a side wall comprising side posts and sheathing, a longitudinally extending bar having a lower horizontal flange resting upon the upper ends of the posts, a vertical web resting against the sheathing, an upper horizontal flange, carlines resting upon the upper flange with their ends downturned against the outer face of the web and substantially conterminous with the lower edge of the same, roof plates bridging the space between the carlines with their ends downturned over the depending ends of the carlines, cap strips overlying the carlines and adjacent edges of the roof plates and having their ends downturned over the downturned ends of the roof plates and the carlines and roof plates, means to rigidly secure the carlines to the upper flange of the bar, and means to loosely secure the cap strips to the bar, substantially as described.

3. In a car, the combination of a side wall comprising exteriorly arranged side posts and interiorly arranged sheathing, the side posts terminating short of the upper edge of the sheathing, a longitudinally extending Z-bar having a lower outwardly projecting horizontal flange resting upon the upper

ends of the posts, a web, and an upper inwardly projecting horizontal flange, carlines extending from wall to wall and resting upon the upper flange with their ends downturned and terminating against the upper face of the lower flange, roof plates bridging the spaces between the carlines and having their ends downturned over the depending ends of carlines, cap strips overlying the carlines and adjacent edges of the roof plates and having their ends downturned to the upper face of the lower flange, means to rigidly secure the carlines to the upper flange, and means to secure the cap strip to the lower flange of the bar, substantially as described.

4. In a car, the combination of a side wall comprising exteriorly arranged side posts and interiorly arranged sheathing, the side posts terminating short of the upper edge of the sheathing, a longitudinally extending Z-bar having a lower outwardly projecting horizontal flange resting upon the upper ends of the posts, a vertical web resting against the outer face of the sheathing, an upper inwardly projecting horizontal flange, trough-like carlines resting upon the upper flange with their ends downturned against the outer face of the web and terminating against the upper face of the lower flange, roof plates having marginal flanges resting within the trough of the carlines and their ends downturned over the depending ends of the carlines, cap strips overlying the carlines and adjacent edges of the roof plates and having their ends downturned to the upper face of the lower flange of the Z-bar, means to secure the carlines to the upper flange of the Z-bar, and means to secure the cap strips to the lower flange of the Z-bar, substantially as described.

5. In a car, the combination of a side wall comprising exteriorly arranged side posts and interiorly arranged sheathing, the side posts terminating short of the upper edge of the sheathing, a longitudinally extending Z-bar having a lower outwardly projecting horizontal flange resting upon the upper ends of the posts, a vertical web resting against the outer face of the sheathing, an upper inwardly projecting horizontal flange, trough-like carlines extending from wall to wall and resting upon the upper flange with their ends downturned against the outer face of the web and terminating against the upper face of the lower flange, filler blocks resting on the upper flange of the Z-bar and filling the spaces between adjacent carlines, roof plates having marginal flanges resting within the trough of the carlines and their ends downturned over the depending ends of the carlines, cap strips overlying the carlines and adjacent edges of the roof plates and having their ends downturned to the upper face of the lower flange of the Z-bar, means to secure the carlines to the upper flange of the Z-bar, and means to secure the cap strips to the lower flange of the Z-bar and the side posts, substantially as described.

6. In a car, the combination of a side wall comprising exteriorly arranged side posts and interiorly arranged sheathing, the side posts terminating short of the upper edge of the sheathing, a longitudinally extending Z-bar having a lower outwardly projecting horizontal flange resting upon the upper ends of the posts, a vertical web resting against the outer face of the sheathing, an upper inwardly projecting horizontal flange, trough-like carlines extending from wall to wall and resting upon the upper flange with their ends downturned against the outer face of the web and terminating against the upper face of the lower flange, filler blocks resting on the upper flange of the Z-bar and filling the spaces between adjacent carlines, roof plates having marginal flanges resting within the trough of the carlines and their ends downturned over the depending ends of the carlines, cap strips overlying the carlines and adjacent edges of the roof plates and having their ends downturned to the upper face of the lower flange of the Z-bar and thence bent outwardly to form a lip resting thereon, means to rigidly secure the carlines to the upper flange of the Z-bar, and means to loosely secure the lips of the cap strip to the lower flange of the Z-bar, substantially as described.

7. In a car, the combination of a side wall comprising exteriorly arranged side posts and interiorly arranged sheathing, the side posts terminating short of the upper edge of the sheathing, a longitudinally extending Z-bar having a lower outwardly projecting horizontal flange resting upon the upper ends of the posts, a web, and an upper inwardly projecting horizontal flange, carlines extending from wall to wall and resting upon the upper flange with their ends downturned over the outer face of the bar, roof plates bridging the spaces between the carlines and having their ends downturned over the depending ends of the carlines, cap strips overlying the carlines and adjacent edges of the roof plates and having their ends downturned over the depending portions of the plates, means to rigidly secure the carlines to the upper flange, and means to secure the cap strip to the bar to confine the depending portions of the carlines and roof plates, substantially as described.

8. A car roof structure comprising a Z-bar extending longitudinally of the structure with its lower flange on the outer side and its upper flange on the inner side of the structure, a carline resting on and se-

cured to the top flange of the Z-bar and having its end downturned over the outer side of the web of the Z-bar, a roof-plate upon the carline with its end downturned over the downturned end of the carline, a cap strip overlying the carline and roof-plate with its end downturned over the downturned ends of the roof-plate and carline and secured to the lower flange of the Z-bar, substantially as described.

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