

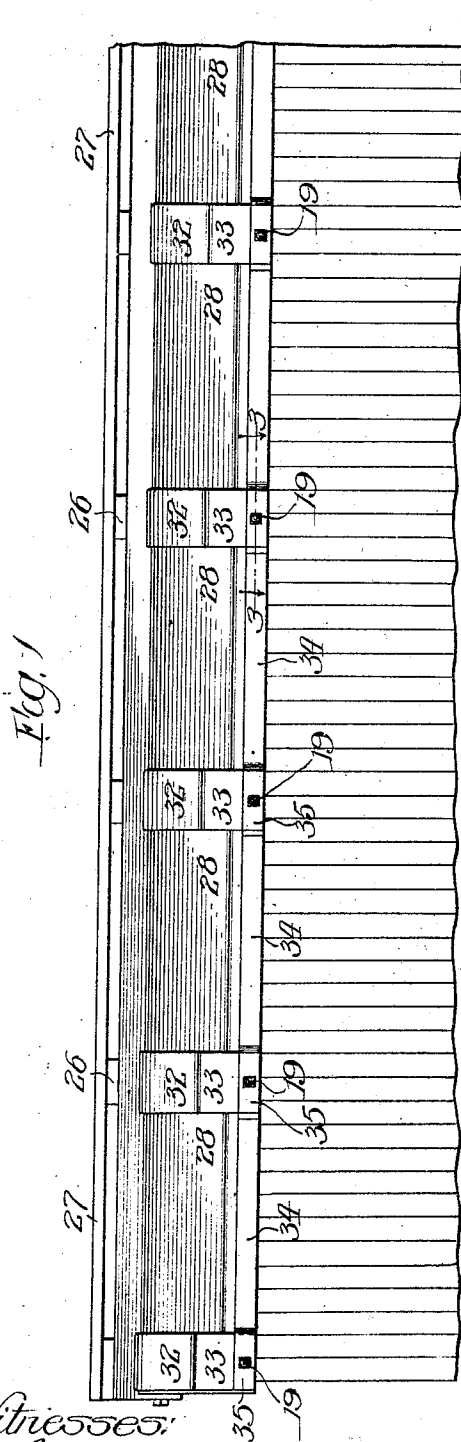
H. A. CHRISTY.
CAR ROOF.

APPLICATION FILED JAN. 22, 1912.

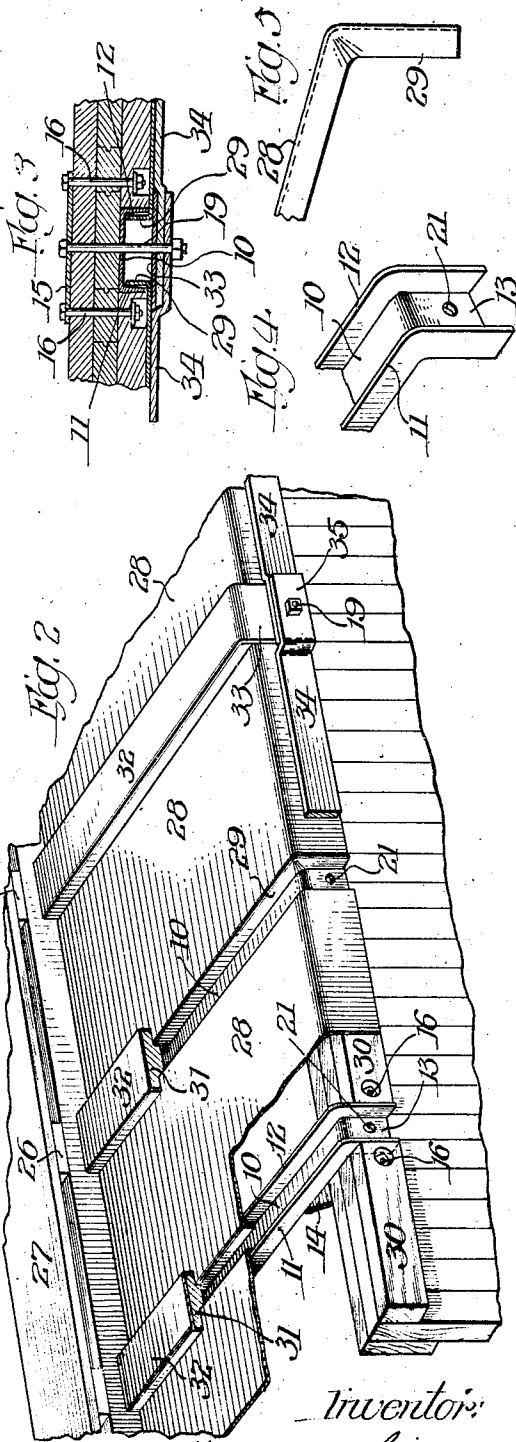
Patented May 13, 1913.

2 SHEETS—SHEET 1.

1,061,268.



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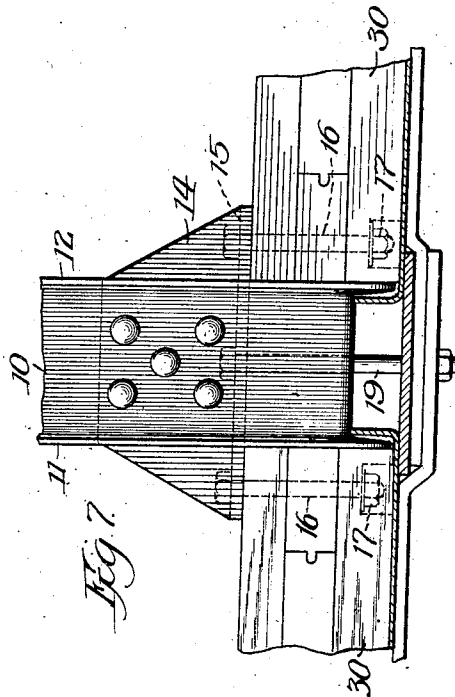
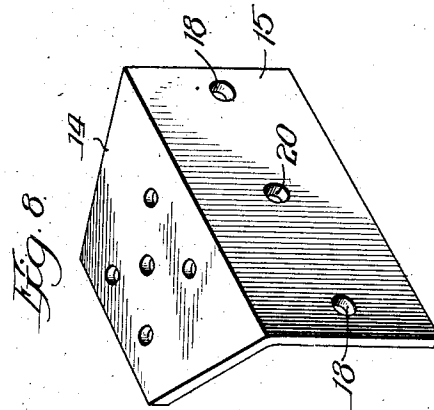
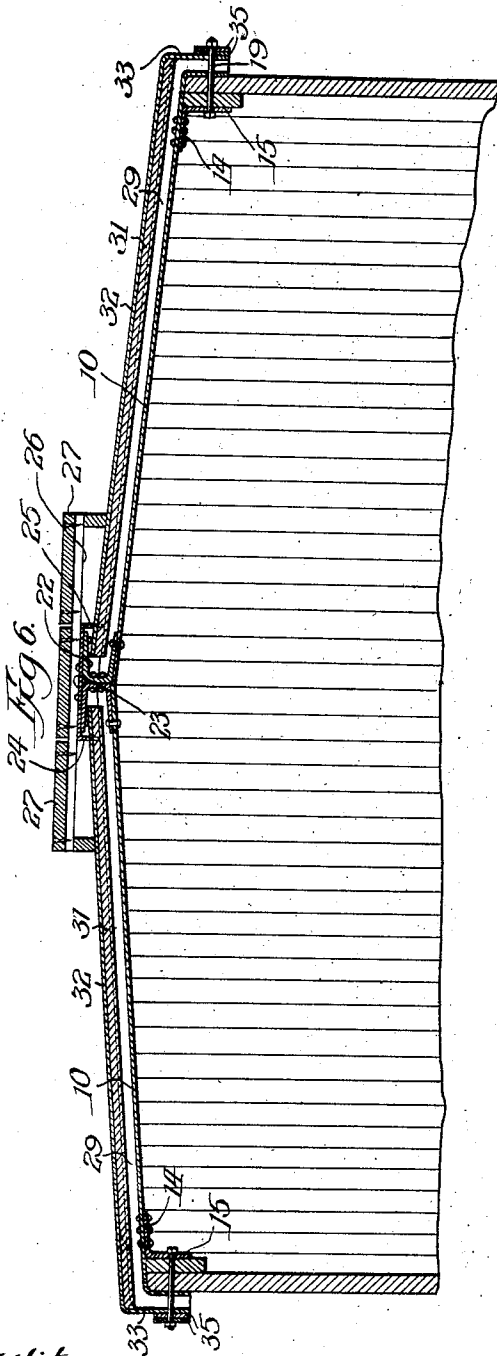
CAR ROOF.

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2 SHEETS—SHEET 2.

1,061,268.



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UNITED STATES PATENT OFFICE.

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CAR-ROOF.

1,061,268.

Specification of Letters Patent.

Patented May 13, 1913.

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To all, whom it may concern:

Be it known that I, HENRY A. CHRISTY, a citizen of the United States, residing at Chicago, 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.

My present invention pertains to improvements in the construction of railway car roofs, its leading and principal aims and objects being to provide a structure of this character which shall be more thoroughly and completely weather-proof and at the same time flexible, to compensate for inequalities in the movement or distortion of the car-body, than has heretofore been attained.

One feature of this novel construction resides in the ease and facility with which one or more of the metal roof plates may be removed and replaced if for any reason it becomes damaged. The portions of the car-roof which require especial care in their construction ordinarily are the parts at the middle of the roof and adjacent to or above the side walls. In order to eliminate all possibility of leakage at the center of the roof, in the preferred embodiment of my invention I extend the roof plates from side wall to side wall so that there is no joint between roof plates beneath the running board. In order to thoroughly drain the roof of any rain or accumulated moisture, the carlines are made of channel form, trough side upward, and to facilitate the discharge of any of the water which may find entrance to these troughs, the ends of the carlines at the sides of the car-body are bent downwardly, and cooperating with such carlines or roof supports, I employ roof plates having depending flanges along their edges accommodated in the troughs and resting upon the webs of the carlines, each roof plate at its outer ends being turned down over the side of the car-body to facilitate the drainage referred to. In order to maintain these roof plates in place, I employ cap strips above the carlines and suitable straps along the top portions of the car-body side-walls, but the association of the parts is such that although the completed structure is rain and weather-proof, it possesses a sufficient degree of flexibility to readily accommodate

itself to any of the ordinary distortions and twisting of the car-body, without any damage to the parts.

In order that a thorough and complete understanding of this invention may be had, I have illustrated in the accompanying drawings forming a part of this specification, and to which reference should be had, a preferred embodiment of this invention, and in these drawings: Figure 1 is a fragmentary side view of a car-body equipped with one of my improved roofs; Fig. 2 is a perspective view on a larger scale of the same construction, parts of the roof structure being broken away to more clearly indicate the nature of the construction; Fig. 3 is a horizontal section through the car-body on line 3—3 of Fig. 1 along its top portion through the straps holding the edges of the roof plates in place; Fig. 4 is a perspective view of the lower or outer end portion of one of the carlines; Fig. 5 being a side elevation of a fragment of one of the roof plates indicating how its construction permits it to readily fit and cooperate with the carlines illustrated; Fig. 6 is a fragmentary vertical cross-section through the car-body and roof; Fig. 7 illustrates in section the manner of attachment of the carlines to the car bodies in order to secure a firm and rigid frame structure, and Fig. 8 illustrates in perspective one of the brackets or gusset plates fastened to each of the carlines and the side walls to strengthen the roof structure and rigidly secure the carline to the side wall.

By referring to the drawings, it will be observed that each of the cambered or bent channel carlines 10, 10, extend from one side-wall of the car-body to the other, and is disposed with its opposite marginal flanges 11 and 12 upwardly extended. At each end, the web of the carline as well as the outstanding flanges, are bent downwardly to provide the ears or attachment portions 13, which rest against the outer face of the side-wall, with the flanges extended outwardly, as is clearly illustrated in the various views.

In order to brace the roof structure and assist in maintaining the carlines in proper relation with the side-walls, each end portion of the carline has riveted to the under

face of its web an angle bracket member 14, having a depending flange or plate portion 15 wider than the width of the carline and bearing against the top portion of the inner face of the side-wall, and in order to securely fasten the end of the carline in position bolts 16, 16, having countersunk nuts 17 pass through holes 18, 18 in the plate 15 and registering holes in the side-wall, maintaining the parts rigidly associated. Another, or central bolt 19 extends through the middle hole 20 of the plate portion 15, and also through the side-wall, and an alined hole 21 in the downturned end 13 of the carline. As will be explained hereinafter, this bolt also holds in place the end of the corresponding cap strip and the overlapped portions of the straps which maintain the roof-plates in position. At its apex or central part, each of these carlines has riveted to the top surface of its web a running-board support 22, which if desired, may be formed by riveting together, web to web, two short sections of channel beams. These running-board supports or brackets are narrower than the troughs of the carlines, leaving a space at each side between the support and the flanges of the carline for a purpose hereinafter indicated. Connecting together these running-board supports, and indirectly fastening together the central portions of the carlines is a plate 23 riveted or bolted to the top surfaces of the supports 22, such plate along its longitudinal edges, having downturned flanges 24 and 25. Above this plate 23 are cross strips 26, to the tops of which are fastened the running-boards or planks 27, 27. Each roof-plate 28 is also of cambered or bent form, and extends from side-wall to side-wall, having along its opposite longitudinal edges depending or downturned flanges 29 accommodated or received loosely in the troughs of the carlines, it being understood that the edges of these flanges rest upon the webs of the carlines, and the flanges are of sufficient width to maintain the body-portion of the roof-plate above the edges of the carline flanges 11 and 12, so that the weight of such plates is supported by their flanges and is imposed directly on the webs of the carlines. These flanges 29 do not necessarily bear against the inner faces of the carline flanges, but are desirably spaced inwardly away therefrom a slight distance, to give the roof the desired flexibility and capability of distortion or warping without occasioning leakage. At the center of the car these roof-plate flanges pass directly by the running-board supports, being loosely accommodated in the troughs of the carlines between such supports and the carline flanges. At their opposite ends, each of the metal roof-plates, as well as the marginal flanges, are bent downwardly. In other words, they follow and conform to

the shape of the carline, and desirably between the outwardly projecting flanges of the carlines I fasten to the side-walls the wooden fillers or blocks 30, which, as is clearly shown in the drawings, are recessed or countersunk for the accommodation of the nuts 17 and bolts 16. In order to hold these roof-plates down in position on their supporting carlines, and also to assist in maintaining the roof in weather-proof condition, I use a pair of cap strips, that is, one on each side of the car, covering each carline. Each of these cap strips is desirably composed of a wooden filler or block 31 covered with a sheet-metal cap 32, the block being formed so as to project downwardly to some degree into the trough of the carline between the flanges of the adjacent roof-plates, but the construction is not such as to bind these flanges in position or to prevent a reasonable flexibility of the structure. The upper end of each of these cap strips 31, 32, is accommodated beneath the running-board support 22 and the downturned flange 24 or 25 of the plate 23, such flange holding the cap in proper position with relation to the roof-plates, to prevent its improper rise or elevation. At its other end each of these cap strips has a downturned ear or attachment portion 33, the side flanges of the metal covering being omitted at such end.

The outer edge portions of the roof-plates are not directly fastened to the car-body side-wall, but are maintained in place by means of sectional straps 34, the overlapped ends 35 of which, as well as the ears 33 of the cap strips are apertured in alinement or register for the accommodation of the bolt 19, the latter, with its nut, passing through the bracket member 15, the car-body side-wall, the downwardly extended portion of the carline, the depending attachment ear of the cap strip, and the overlapping ends of the retaining straps. By this simple means these various parts are securely and properly held in place, but their removal, if desired, is effected with facility and despatch. From this description of this desirable embodiment of this invention, it should be apparent that the roof-plates are loosely associated with the carlines, giving the roof structure the capability of conforming to the distortion or twisting of the car-body due for example, to the uneven loading of the lading. Also the downturned edge portions of the roof-plates, since they are not directly bolted or otherwise clamped to the side-walls, permit a certain degree of movement between the parts without damage to the roof structure or occasioning leakage. The side flanges on these roof-plates are of sufficient width so as to hold the body of the plate above the top edges of the carline flanges, thereby preventing rubbing of these

two parts, and rusting due to the removal of the galvanizing which would be brought about if such a rubbing contact were permitted, also the metal coverings 32 of the cap strips 31 are not permitted to quite touch the top of the roof-plates for the same reason. In order to take out a damaged roof-plate, it is merely required to remove the necessary bolts 19, take off the corresponding cap strips and remove portions of the plate 23 and running-boards 27, which may desirably be made in short lengths to facilitate the removal and replacement of damaged roof-plates, then the injured roof-plate may be readily lifted out of place and a new undamaged one substituted, the parts being capable of being replaced in their original positions without difficulty and at a comparatively small expense of time and energy. While I have herein illustrated and described one desirable embodiment of the invention, I wish to have it understood that the invention is not limited and restricted to the precise and exact details of construction herein set forth, because this structure may be modified within comparatively wide limits without departure from the substance of the invention, and without the sacrifice of any of its substantial benefits and advantages.

I claim:

1. In a car-roof construction, the combination of channel carlines disposed trough-side upward, the ends of such carlines including their outstanding flanges being bent downwardly over the car-body side-walls, and sheet-metal roof-plates having ends downturned over such side-walls and having inwardly extended flanges accommodated in the troughs of said carlines and conforming to the shapes of such carlines including the downturned ends thereof, substantially as described.

2. In a car-roof construction, the combination of channel carlines disposed trough-side upward, the ends of such carlines including their outstanding flanges being bent downwardly over the car-body side-walls, and sheet-metal roof-plates having ends downturned over said side-walls and having inwardly extended flanges accommodated in the troughs of said carlines and conforming to the shapes of such carlines, and filler blocks disposed between the downturned ends of the roof plates and the side wall, substantially as described.

HENRY A. CHRISTY.

Witnesses:

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WALTER M. FULLER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."