W. P. BETTENDORF, DEC'D.

J. W. BETTENDORF, ADMINISTRATOR.

ROOF FOR RAILWAY CARS.

APPLICATION FILED JULY 22, 1910.

1,055,698.

Patented Mar. 11, 1913.

2 SHEETS—SHEET 1.

Fig. 1.

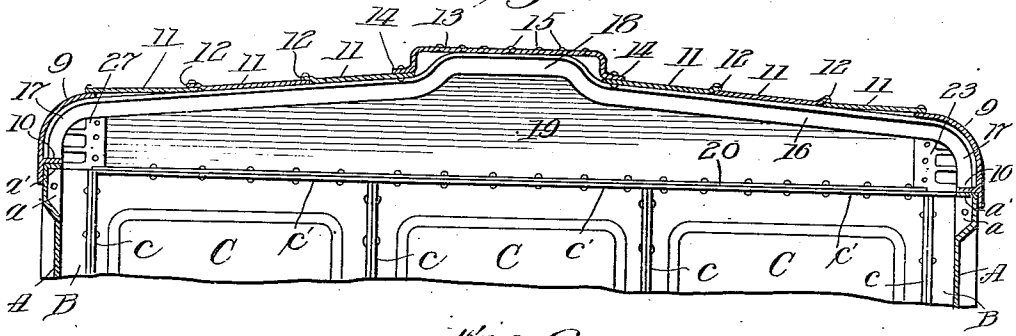


Fig. 2.

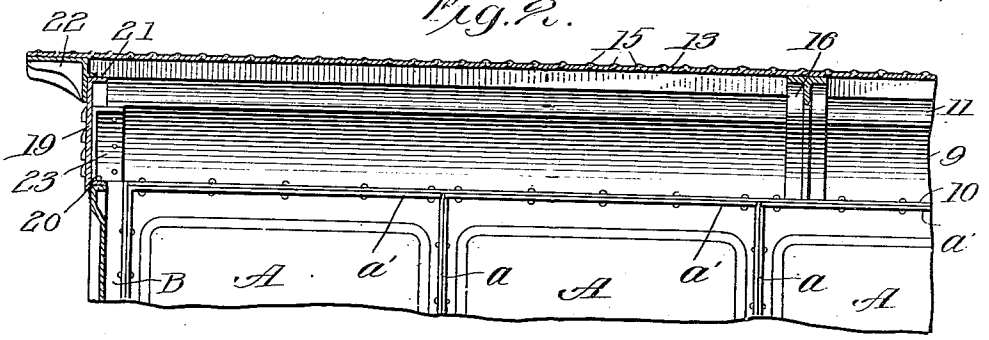


Fig. 3.

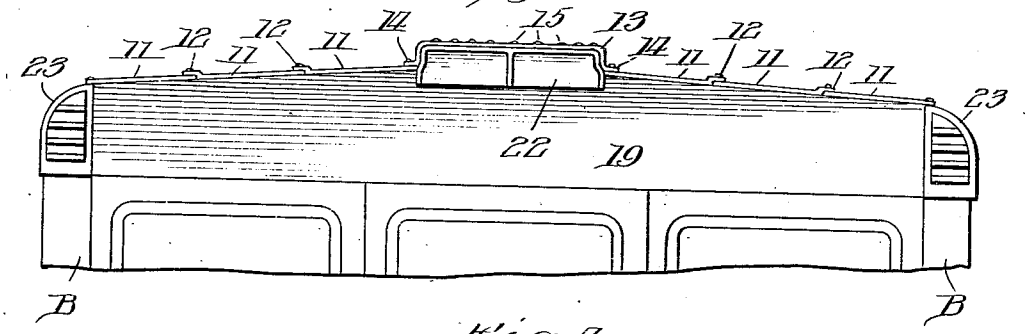
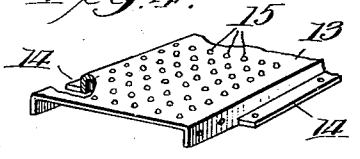


Fig. 4.



Witnesses:

Harry S. Gaither

E. Lundy.

Inventor:

William P. Bettendorf, (deceased)
Joseph W. Bettendorf, Administrator.

by Frank D. Thomason.

Atty

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2 SHEETS—SHEET 2.

Fig. 5.

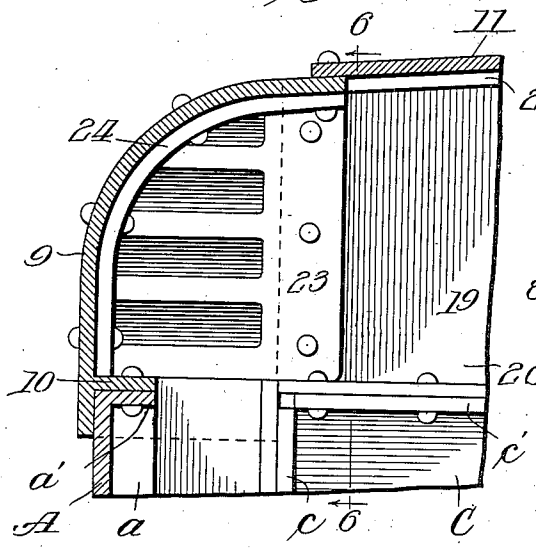


Fig. 6.

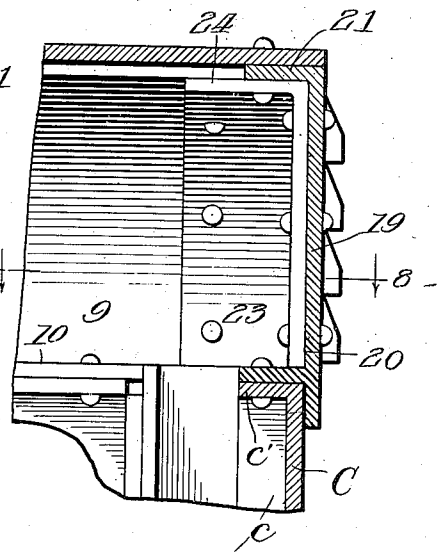


Fig. 7.

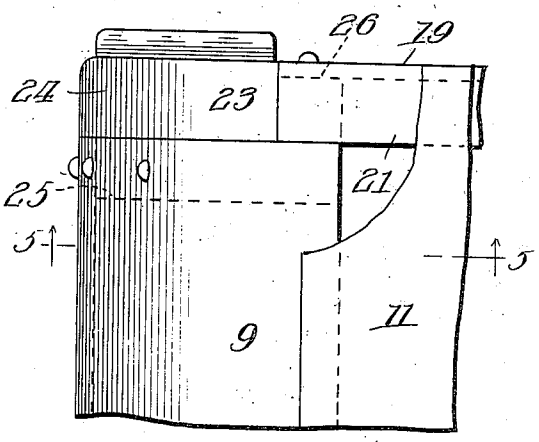
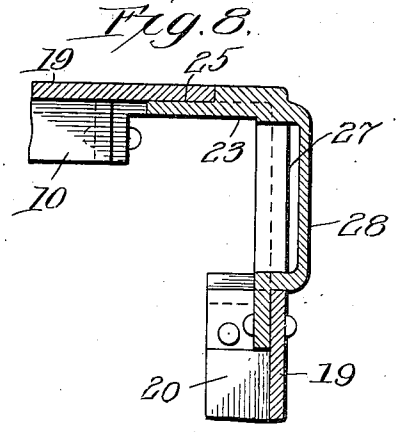


Fig. 8.



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UNITED STATES PATENT OFFICE.

WILLIAM P. BETTENDORF, DECEASED, LATE OF BETTENDORF, IOWA; JOSEPH W. BETTENDORF, ADMINISTRATOR.

ROOF FOR RAILWAY-CARS.

1,055,698. Specification of Letters Patent. Patented Mar. 11, 1913.

Original application filed December 17, 1909, Serial No. 533,605. Divided and this application filed July 22, 1910. Serial No. 573,172.

To all whom it may concern:

Be it known that WILLIAM P. BETTENDORF, deceased, late a citizen of the United States, residing at Bettendorf, in the county of Scott and State of Iowa, did invent new and useful Improvements in Roofs for Railway-Cars, of which the following is a full, clear, and exact description.

This invention relates to freight cars and more particularly to the kind that are known as box-cars and constructed principally of metal.

It is the object of said invention to provide a car of this kind, the roof of which, including the eaves-plates, and the carlines are made of rolled metal beams and support a series of sheet-metal roof-plates, the central one of said plates forming a suitable running-board.

It is a further object of said invention to provide a strong, durable, and economically constructed freight car.

These objects are accomplished by the means and in the manner hereinafter fully described and as more particularly pointed out in the claims, reference being had to the accompanying drawings, forming a part of this specification, in which,

Figure 1 is a transverse vertical section of a railway car showing only the upper portion of the side and end-walls with the improvements applied thereto. Fig. 2 is a central longitudinal vertical section of the upper portion of the end of the car. Fig. 3 is an outside elevation of the upper portion of the end-wall and roof of the same. Fig. 4 is a detail drawn in perspective of one end of the running-board. Fig. 5 is a vertical transverse fragmentary section drawn to an enlarged scale of the corner ventilating casting taken on line 5—5, Fig. 7. Fig. 6 is a vertical section thereof taken on line 6—6, Fig. 5. Fig. 7 is a top plan view thereof, and, Fig. 8 is a horizontal section of the same taken on line 8—8, Fig. 6.

The body of the car, that is, the walls and underframe, preferably, are constructed in the manner set forth and claimed in an application for Letters Patent of the United States that was filed by said William P. Bettendorf, deceased, on December 17th, 1909, Serial Number 533,605 for "metal box-car construction" (Case 159), of which this application is a division. In said application the side-walls preferably comprise a plurality of elongated paneled sheet-metal plates A, A, set upright and having their lower portions secured to the web of the channeled side-sills of the underframe. The longitudinal edges of these side-plates are provided with laterally projecting inwardly bent flanges *a*, *a*, whereby each plate is secured or riveted to the adjoining plates or the corner-post B thereby affording stability to the walls and providing a suitable support for the roof. The upper edges *a'* of these plates are likewise flanged inwardly and form a seat for the longitudinally disposed eaves-plates of the roof. The plates C, forming the end-walls of the car are formed very similar to those of the side-walls being provided with vertical longitudinal flanges *c*, *c*, and horizontal inturned flanges *c'* on their upper ends. The corner-posts B comprise suitable vertically disposed channel-beams each being bent longitudinally into an angle midway between its flanges and extend as high as the eaves-plates.

The eaves-plates 9 are preferably made of rolled metal beams, and have the lower edges of the webs thereof extended past and lap down over and outside the upper flanges *a*, of plates A. Suitable lateral flanges 10 are provided on the inner surface of the lower portions of these eaves-plates that are adapted to rest upon and be riveted to the flanges *a'* of the side-plates of the car-body. The upper portions of these eaves-plates are curved inwardly toward each other, and their upper edges are overlapped by the longitudinally extending roof-plates 11. There are several of these roof-plates 11 between the eaves-plates and the running-board at the crown of the roof of the car, and each is constructed with its lower edges having an offset 12 to lap over the upper surface of the adjacent edge of the plate below it.

The running-board consists of a longitudinally extending sheet metal plate 13 which constitutes the central portion of the roof and it is about twice the width of the eaves-plates, and this running-board is of an inverted channel-shape, with the longitudinal edges 14 thereof flanged laterally outward and overlapping and secured to the contiguous longitudinal edge of the floor-plates nearest to it. The upper surface of the run-

ning-board plate is preferably roughened by providing the same with a number of teats or embossments 15 made by punching the metal upward to a slight extent from underneath, substantially as shown, or the same may be provided with corrugations in any suitable manner or of any design.

At proper intervals along the length of the roof, the roof-plates, and the running-board, are supported by and secured to suitable carlines 16, which preferably consist of T-beams whose ends terminate at and rest upon the flanges 10 of the eaves-plates or flanges *a* of the side-plates. These carlines are usually continuous from end to end and bridge over from side-wall to side-wall of the car, and have their ends 17 quadrant-shaped or curved downwardly to meet the side-wall of the car. From their ends they are inclined upwardly to conform to the pitch of the roof, and at their centers of length are provided with a raised portion 18 that is deflected upwardly and horizontally to form a support for the running-board, substantially as shown in Fig. 1 of the drawings.

Both the end and side-walls of the car-body terminate in the same horizontal plane and the end of the car above the plane of said plates and between the same and the roof is closed by a suitable plate 19. The lower horizontal edge of this latter plate is of substantially the same construction as the corresponding portion of the eaves-plates,—that is, it is provided with an inwardly projecting flange 20 that rests upon and is secured to the flanged upper edge of the end-wall-plates, and also has its vertical portion extended below the upper edges of said wall-plates. The upper edge of this plate 19 is inclined upward toward its center of length from each end to conform to the pitch of the roof and has an inwardly bent flange 21 which affords a support for and to which the ends of the roof-plates are riveted. As shown in the drawings, the ends of the running-board preferably extend beyond the ends of the car, and the overhanging ends are supported by means of suitable cast-metal or other brackets 22 which latter are adapted to act as fillers to close the openings between the central portion of the upper edges of plates 19 and the underside of the running-board, and the running-board, where it extends beyond the vertical plane of the end of the car has its flanges cut away as shown.

The ends of the plate 19, above the vertical plane of the adjacent edge of the corner posts B, and the ends of the eaves-plates 9, terminate a short distance from the corners of the car-walls, and the space thus left is occupied by corner-plates or filler-plates 23, which are preferably made of cast-metal. The main body of each of these corner plates comprises a flat vertical portion having its outer surface slightly outside the vertical plane of the walls of the car, and this vertical portion has its curved top and vertical side 24 flanged to conform to the shape of the eaves-plates. Immediately next said eaves-plates this portion is provided with a depressed edge 25 over which said eaves-plates are lapped and riveted. The lower outer edge of the adjacent roof-plate overlaps the upper edge of this flanged portion 25 and the adjacent edge of the eaves-plates. The web of this corner-plate, corresponding to the outer surface of the plate 19 above the end-plates of the car-wall, is provided with a depressed portion 26 adjacent said end-plate 19 in which the vertical web of the latter is seated and riveted and the upper web of said corner-plate immediately above this depressed portion is likewise depressed to receive the flange 21 of said plate. Suitable ventilating openings 27 are protected from the atmospheric elements by small integral shields or aprons 28.

This forms a strong and durable construction and permits perfect ventilation throughout the car, particularly near the roof of the same so that the heated air, resulting from the exposure of the car to the sun in warm weather, will, when the car is in motion, be removed. It will also be seen that the skeleton frame-work, such as usually employed for the body of the car, with the exception of the corner-posts thereof, is almost entirely dispensed with and merely the carlines used.

What is claimed as new is:—

1. A box-car having a roof comprising a series of longitudinally arranged metal plates, the central plate of which is of an inverted channel shape, and has its side edges flanged outward and overlapping the adjacent edges of the roof-plates next the same, and the last mentioned roof-plates having their outer edges overlapping those alongside of them and so on, and the outer roof-plates constituting eaves-plates that are curved downward and drain outside of the walls of said car.

2. A box-car having a roof consisting of a series of longitudinally arranged metal plates, downwardly curved eaves-plates, that have inwardly projecting horizontal flanges which are supported upon and secured to the upper edges of side-walls of the car, and carlines bridging over the space between said flanges and conforming to the shape of the roof and supporting the roof-plates thereof.

3. A box-car having a roof comprising a series of longitudinally disposed metal plates, a running-board formed of a central horizontal plate the side edges of which are

flanged downward and outward and overlap the adjacent edges of the roof plates next the same, the last mentioned roof-plates having their opposite longitudinal edges overlap those alongside of them and so on, the outer roof-plates constituting eaves-plates, that curve downward and drain outside the walls of the car, and carlines supporting the greater part of the width of each of said plates.

4. A box-car having a roof comprising a series of longitudinally arranged metal plates, the side edges of the integral central one of which overlap and contact with the adjacent edges of the inclined roof plates next the same, the last mentioned roof-plates having their opposite edges overlap the adjacent edges of the inclined plates alongside of them and so on, and the outer roof-plates constituting eaves-plates which are curved downward and drain outside the walls of said car.

5. A box-car having a roof comprising a series of longitudinally disposed metal plates having their edges overlapping, a running-board formed of a central horizontal plate, having its longitudinal edges bent downwardly and outwardly to support the same and overlapping the edges of the adjacent plates.

6. A box-car having a roof comprising a series of longitudinally disposed metal plates having their edges overlapping, a running-board formed of a central horizontal plate having its longitudinal edges bent downwardly and outwardly to directly support the same and overlapping the edges of the adjacent plates, and carlines supporting said roof-plates the central portion of which is deflected upwardly and engages said central roof-plate.

7. The combination with a car-roof having a running-board, of a continuous carline supporting said roof and having its central portion bowed upward and directly supporting said running-board.

8. The combination with a car-roof having a series of longitudinal roof-plates and a running-board plate, of a carline supporting said roof-plates and having its central portion bowed upward and directly supporting the running-board plate.

9. In a box-car a roof comprising longitudinally disposed roof-plates, eaves-plates engaging the lower edges of the same and extending from end to end of the same, and a cast-metal exterior corner-plate to which the end edges of said eaves-plates are secured, and which are provided with longitudinally disposed parallel openings in one wall thereof.

In witness whereof I have hereunto set my hand this 2nd day of July, 1910.

JOSEPH W. BETTENDORF,
Administrator of the estate of William P. Bettendorf, deceased.

Witnesses:
A. B. FRENIER,
O. C. STABY.