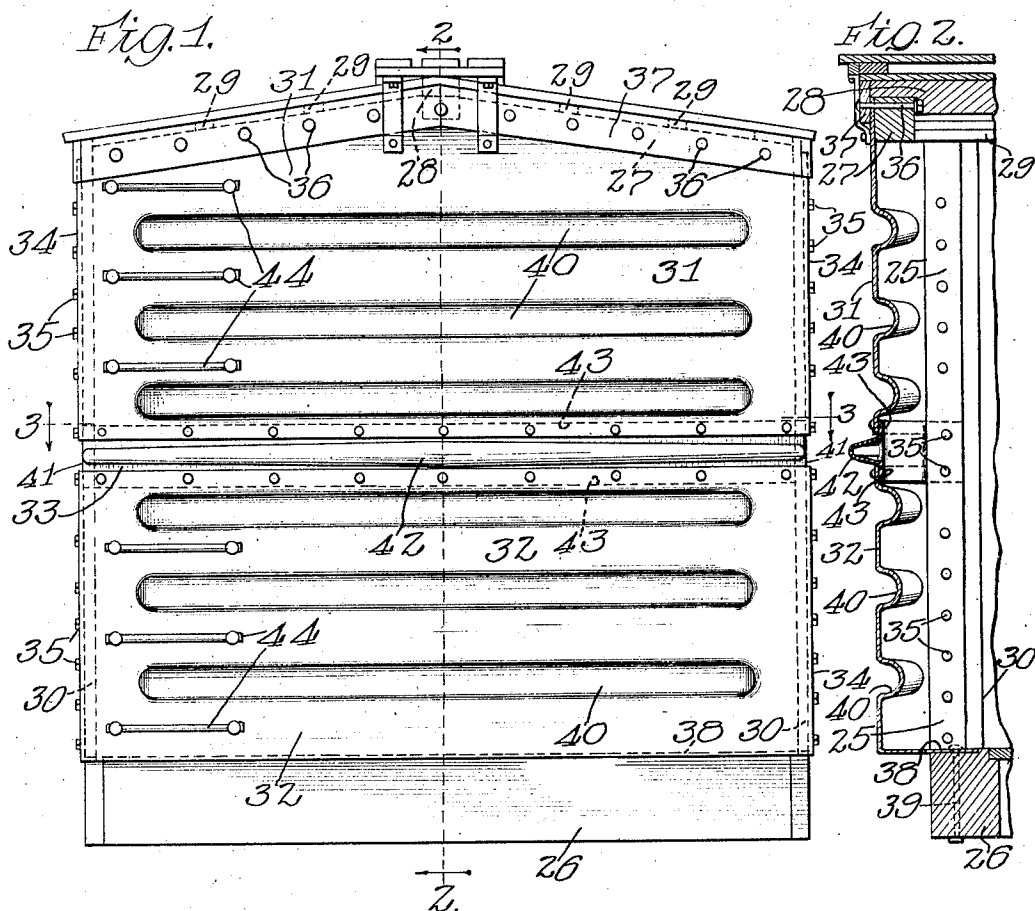
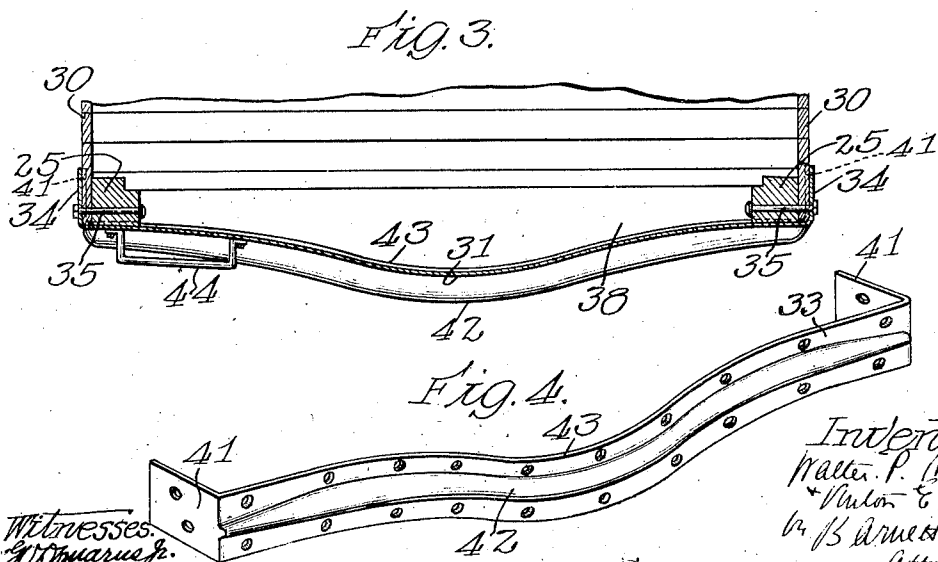


W. P. MURPHY & V. E. SISSON.
METAL END FOR RAILWAY CARS.
APPLICATION FILED JUNE 17, 1912.

1,067,189.

Patented July 8, 1913.

2 SHEETS—SHEET 1.



Witnesses
W. P. Murphy & V. E. Sisson
R. Bauerle.

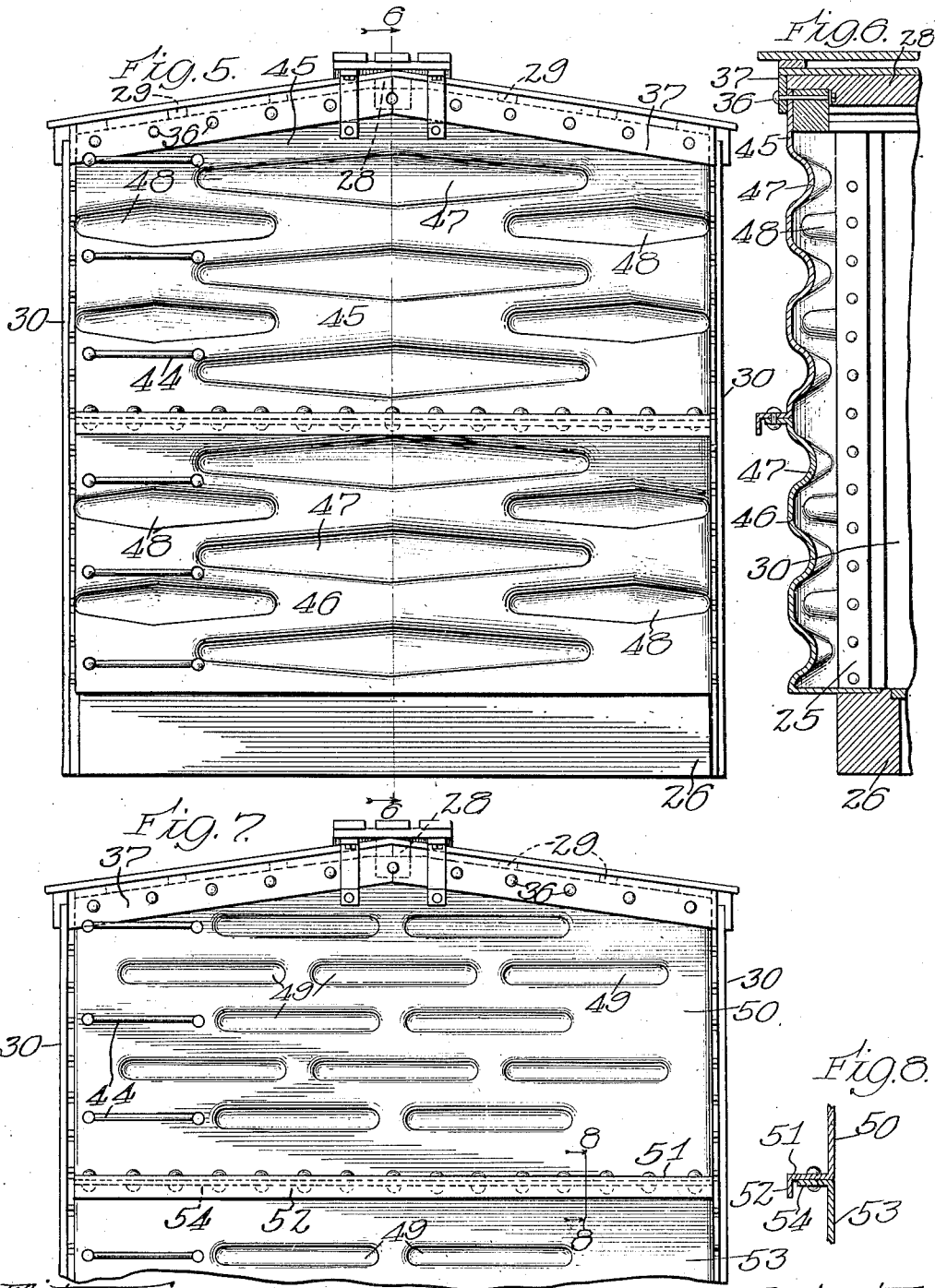
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UNITED STATES PATENT OFFICE.

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METAL END FOR RAILWAY-CARS.

1,067,189.

Specification of Letters Patent.

Patented July 8, 1913.

Application filed June 17, 1912. Serial No. 704,066.

To all whom it may concern:

Be it known that we, WALTER P. MURPHY and VINTON E. SISSON, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Metal Ends for Railway-Cars, of which the following is a specification.

Our invention relates to the construction of railway cars, and the invention has for its object to provide an all metal end structure for railway cars, suitable particularly for box or house cars of the ordinary wooden construction, which shall be very strong and rigid, which can be cheaply made and easily attached either to a new car or to an old car to replace the ordinary wooden end, and which shall have certain other novel and improved features to be hereinafter described and claimed.

The invention is illustrated, in certain preferred embodiments, in the accompanying drawings, wherein—

Figure 1 is an end elevation of a railway box car showing one form of our invention; Fig. 2, a sectional view taken on line 2—2 of Fig. 1, looking in the direction of the arrows; Fig. 3, a sectional plan taken on line 3—3 of Fig. 1; Fig. 4, a view, in perspective, of the girth member used for securing the upper and lower sheets of the end; Fig. 5, a view similar to Fig. 1 illustrating a modified construction; Fig. 6, a sectional view taken on line 6—6 of Fig. 5; Fig. 7, a fragmentary end elevation of a car illustrating another modification, and Fig. 8, a detail section taken on line 8—8 of Fig. 7, looking in the direction of the arrows.

Like characters of reference indicate like parts in the several figures of the drawings.

Referring first to Figs. 1 to 4 inclusive, 25 designates the corner posts of a box car of standard construction, 26 the end sill, 27 the end plate, 28 the ridge pole, 29 the purlins, and 30 the side sheathing of the car. The sheet metal end is composed preferably of two or more sheets of metal which are secured to the car and are fastened one to another by means which provides a water-

proof joint. In the construction shown in these figures there are two sheets, an upper sheet 31 and a lower sheet 32, which are secured together by means of what we have termed a girth member 33. Both sheets have flanges 34 on their vertical edges which are secured to the car preferably by means of the bolts 35 passing through the corner posts 25. Bolts 36 secure the upper sheet to the end plate 27. The same bolts may be used for the attachment to the car of a fascia plate 37. The lower plate has an inturned flange 38 which is secured to the end sill 26 by the bolts 39. The sheets are preferably formed with ribs or corrugations. In the construction shown in the first four figures the corrugations or ribs 40 are disposed horizontally and extend substantially from side to side of the end, that is, from one corner post across to the other so that the end is reinforced uniformly throughout substantially the entire portion between the corner posts. The girth member 33 is provided with the angular flanges 41 bolted to the framework of the car and is preferably formed with the outstanding rib or corrugation 42. The edges of the sheets 31 and 32 are riveted to the rims or flanges 43 above and below the rib 42. The latter serves to prevent water from entering the joint between the girth member and the lower sheet 32. It also gives strength and rigidity to the girth member and to the end structure as a whole. In order to increase the capacity of the car and to add strength and rigidity to the end structure, which is designed to be made of comparatively thin sheet metal, the end structure is made so that it bows or bulges outwardly, this convexity being preferably substantially uniform from top to bottom of the car. If the sheets were bent or otherwise formed so that their cross section described an arc of a circle there would be difficulty in providing the car with an end ladder and in employing the girth member with its outwardly projecting rib unless the body of the car were shortened.

An order of the Interstate Commerce

Commission having for its purpose to insure a sufficient end ladder clearance provides that no part of the car above the end sills within thirty inches from the side of the car shall extend to within twelve inches of a vertical plane parallel with the end of the car and passing through the inside face of the coupler knuckle. If the curvature of the end were struck on the arc of a circle the inner corners of the end ladder grab irons 44 would necessarily stand farther out than the other corners. This would necessarily mean that the body of the car as a whole would have to be proportionately shortened in order to comply with the requirements of the Interstate Commerce Commission. The use of the girth member with its projecting rib would involve the same difficulty. To overcome this the sheets are depressed at each side of the vertical center line. In other words the cross section of each half of a sheet, considered as divided by the center line of the plate, describes a reversed curve. This adds rather than takes away from the strength and rigidity of the structure and diminishes the capacity of the car very little. The inner corners of the ladder grab irons are by this means thrown in so that they project but little, if any, beyond the outer corners.

We do not claim herein a reinforcing girth member for connecting the upper and lower end sheets of a steel end and reinforcing the same, as this is the invention of Vinton E. Sisson and is claimed in the application of said Sisson filed December 11, 1911, Serial No. 665,098.

In Figs. 5 and 6 we have shown a similar construction to that shown in Figs. 1 to 4 inclusive except that there is a different disposition of the corrugations. While it is feasible to form the sheets with corrugations which extend across the sheet from one side to the other, as shown in Fig. 1, the pressing of a sheet of this sort, if the corrugations are of any considerable depth, is likely to be difficult owing to the tendency of the metal to draw and distort the sheet. To overcome this difficulty the sheets 45 and 46 are formed with a series of centrally arranged corrugations 47 which are preferably widest at their middle points and tapered down toward the ends and which preferably do not extend very close to the edges of the sheet. At each side of the sheet between these corrugations is a series of preferably similarly tapered corrugations 48 which extend close to the edges of the sheet and between the ends of corrugations 47. By this arrangement the stamping of the sheet is facilitated. At the same time the entire part of the end within the framework of the car is given a reinforcement which is substantially uni-

form throughout, no part being weaker than any other.

A different disposition of the corrugations by means of which the ends of each corrugation are out of vertical alinement with the ends of the corrugation directly above and below it, is shown in Fig. 7, the corrugations being designated 49. This staggered arrangement facilitates the pressing of the sheet by preventing the metal from drawing in much the same way as the arrangement shown in the preceding two figures.

In the construction shown in Figs. 7 and 8 the upper sheet 50 is formed with a flange 51 having a downwardly projecting lip 52. The lower sheet 53 is formed with a flange 54 which is riveted to the flange 51. This provides for a waterproof joint between the sheets.

While we have shown our invention embodied in certain preferred constructions, it will be obvious that other modifications might be made without departure from the invention. Therefore we do not limit ourselves to the particulars shown and described except as the same are made specific limitations in certain of the claims; the purpose being to claim, both broadly and narrowly, whatever patentable novelty our invention may possess in view of the state of the art.

We claim:

1. The combination with a railway car, of a sheet metal end for the same which bulges outwardly, with substantial uniformity from the top to the bottom of the end, the cross section of each half of the end as divided by its vertical center line describing a reversed curve.

2. The combination with an end sill and corner posts of a box car, of a sheet metal end secured to said sill and posts which bulges outwardly, the bulging portion of the ends being provided with vertically extending depressions at opposite sides of said end, and a ladder attached to the end at one of said depressions, substantially as and for the purpose described.

3. A metal end for railway cars comprising a sheet of metal extending across the car from one corner post to the other and secured thereto, formed with a series of substantially horizontal corrugations centrally arranged on the sheet and tapered from the center toward their ends, and, at each side of the sheet, a series of shorter corrugations tapered from their center which lie between the ends of the first series of corrugations and extend outwardly beyond the same, substantially as and for the purpose described.

4. A metal end for railway cars comprising a sheet of metal extending across the car from one side to the other and secured thereto, formed with a series of substantially

horizontal corrugations, and, at each side of the sheet, a series of shorter corrugations which lie between the ends of the first series of corrugations and extend outwardly beyond the same.

5. A metal end for railway cars comprising a sheet of metal extending across the car from one side to the other and secured thereto, formed with a plurality of substantially
10 horizontal corrugations which are disposed

in staggered relation so that the ends of each corrugation are out of vertical alignment with the ends of the corrugations directly above and below the same.

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